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| | P | Ahlbeck | Gen* | | | <p>At first you show that the heat wave in the 1930:s was not global but took place in the northern hemisphere only. Maybe, maybe not, because the accuracy of global mean temperature measurement for the 1930:s is poor, especially regarding Siberia and ocean water surface. But you obviously accept that the 1930:s were very hot in the USA!</p> <p>Then, when you make new diagrams of trends in temperature, precipitation, storms a.s.o. for the USA, you omit the 1930:s and start the curves from some later decade. This is very misleading, you obviously use your claim of a globally “normal” temperature in the 1930:s as a reason to omit the 1930:s in your USA curves. A dirty trick.</p> <p>If you want to describe observed trends from the USA, you should start all curves as early as possible. And because you have all information you want from the 1930:s (in Finland we have, so you must have it too) the curves for USA should of course involve the 1930:s too.</p> <p>But that will not give very many curves in support for your theory that the enhanced greenhouse effect has caused most of the recent changes in the USA, and that’s why you are not going to do it.</p> <p>Having personally experienced the political propaganda in the Soviet Union, this way of making reports report sounds familiar. Because the theory is believed to be 100% correct despite confusing observations, all information is carefully cherrypicked to support the theory.</p> <p>Especially the words “could” and “but” were typical of communist propaganda. Almost anything bad COULD happen because of capitalism. Carbon dioxide (capitalism) is beneficial for a while, BUT warming will spread plant diseases (BUT instability of capitalism will lead to breakdown and revolution).</p> <p>Almost all pictures describe flooding, drought, hurricanes all perfectly connected to climate change and not to land-use change that so far has been the most important parameter influencing flooding and drought worldwide. Environmental change is complicated, and (possible) climate change is only one part of a big picture. Looking through your filtering greenhouse glasses, you will</p> | <p>The accuracy of global temperatures are explained in Smith, Thomas M., Richard W. Reynolds, Thomas C. Peterson, and Jay Lawrimore, 2008: Improvements to NOAA’s Historical Merged Land-Ocean Surface Temperature Analysis (1880-2005). <i>J. Climate</i>, 21, 2283-2296.</p> <p>Time series are presented to generally show the whole period of record. Maps of trends now mainly to show the last 50 years, which is the period when the temperature departs from what could be explained by natural causes alone.</p> <p>Time series figures generally show the whole period of record, such as the figures on page 33.</p> <p>The material presented in the new global section now discusses those variables that have had attribution studies done on them which indicate that their change is due to anthropogenic influences.</p> <p>Could and but also have clear meanings in English that are important and widely used.</p> <p>When changes can be attributed to greenhouse gases, they are stated. For example, figures show that hurricanes have been around for a very long time. But the intensity is changing.</p> |

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| | | | | | <p>not the whole picture.</p> <p>Even the good old “hockey stick curve” was put on a very dominating place in the report. Was it not already omitted from the IPCC report or?</p> <p>I could write tenths of pages of critics about your report, all based on refereed reports freely available in the Internet. But I think you over there have better competence (and enough time and money) to change the report in such a way, that a critically minded scientist would enjoy reading it.</p> <p>As it is now, it is only one in a row of numerous pseudoscientific climate change propaganda papers. There is nothing new and nothing interesting in it. Both the content and the picture material suck.</p> <p>I am going to present the final version of your report when it is official to some Finnish newspaper. It will give it real hard treatment anyway. Ahlbeck, Abo Akademi University, Finland</p> | <p>See IPCC WG I page 467 for figures merging paleo and instrumental data.</p> <p>The USP is a synthesis of all the peer-reviewed literature.</p> <p>As a synthesis of the literature there is nothing new in the USP.</p> <p>Thank you for your comments.</p> |
| P | Allen | Gen* | | | <p>1) This is the true science of the greenhouse effect and shows that it has an upper limit because increased CO2 replaces water vapor which limits the amount of warming!</p> <p>These facts need to be the main emphasis of your report and not the distorte view given in your draft!</p> <p>(Note: Cited article by Zagoni & Miskolczi. They are filed with the responses, if you care to see them.)</p> <p>2) The oceans are cooling and sea levels are falling. Please have your draft reflect facts!</p> <p>(Note: Cited many articles on Sea Level. They are also filed)</p> <p>3) You folks are in a small minority and your assumptions about global warming are in no way supported by the facts as the information below demonstrates.</p> <p>(Note: cited many articles by people regarding climate change. On file)</p> <p>Allen, Public Citizen</p> | <p>1) This is not correct within the magnitude of the changes anticipated over the next century.</p> <p>2) The peer-reviewed literature indicates that the oceans are warming and sea levels are rising.</p> <p>3) Minority or majority opinions do not matter. What matters are the results of reproducible tests. Please see IPCC WG I, section 1.2.</p> |
| P | Ambler | Gen* | | | <p>My name is Harold Ambler, and I am non-scientist with a deep interest in the current debate taking place with regard to climate change. Should you care, I have two Ivy League degrees, the first from Dartmouth College and the second from Columbia University.</p> | |

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| | | | | | <p>Although in the minds of some, my degrees in literary studies would appear to disqualify me from informed comment on climatology, I think that just the opposite is quite possible. To wit, I believe that it is a narrative, rather than true science, that is driving Al Gore and the “warmist” side of the debate.</p> <p>Changes I would propose to your report:</p> <ul style="list-style-type: none"> Your initial temperature graph in the main report, covering the period from 1880 to the present, is an even greater distortion than the fully discredited Mann Hockey Stick graph. The reasons for this are as follows: (1) The time period reflected is too short to be meaningful in terms of climatology, ignoring the Roman Optimum and Medieval Warming Period and other periods of significant warming that predate significant man-made CO2 contributions, (2) It does not reflect the recent cooling! Worldwide temperatures fell by .6 degree Celsius during the most recent La Nina. It is interesting that your graph does not reflect this, to say the least! United States temperatures, measured at rural stations are not rising, as indicated in “National Climate Change,” they have been falling since 1998 or, if you prefer, since 1934, the warmest year in the United States on record (despite 70-plus years of increased CO2 since then). Projections of temperature increases do not equal temperature increases. There are many statistical problems with computer models, as well as significant methodological problems, such as presuming a water-vapor feedback mechanism that has never been shown to exist and the failure to introduce a variety of negative feedback mechanisms that have been shown to exist It is possible that your precipitation intensity measurements are accurate, although I doubt it. Even if they are, establishing causality in terms of temperature increase and of anthropogenic causes behind it is a leap of faith. Again: temperatures have increased repeatedly in the geological record, more than the current episode of warming, and at higher rates! Atlantic hurricane activity has not been shown to increase – this is a well-known and fully discredited canard and among the reasons that Dr. William Gray, the | <p>Please see IPCC WG I section 1.2 which indicates that what is driving that report are the results of reproducible peer-reviewed research.</p> <p>The period from 1880 to the present represents the instrumented record. It represents what the data show. If it does not show recent cooling it is because the data do not indicate recent cooling. The key aspect of earlier warm and cool periods, like today’s warming period, is what is causing the change. The fact that the current changes are being driven by greenhouse gases does not mean that past changes were not driven by changes in solar output.</p> <p>Rural temperatures in the US have indeed indicated warming.</p> <p>Modellers have worked hard to incorporate all known feedback mechanisms in climate models.</p> <p>Temperatures have increased and decreased in the past for a variety of reasons. The current cause of the increase in temperature is greenhouse gases. The link between warming and increased heavy downpours is based on physics, including physics programmed into models.</p> <p>Atlantic hurricane activity has been increasing in recent decades and the intensity (though not the number) of storms is projected to</p> |

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| | | | | | <p>nation’s foremost authority on hurricane activity, does not subscribe to manmade global warming theories.</p> <ul style="list-style-type: none"> • Projections about stronger storms are also based on faulty computer programs that have been rigged to produce “the right kind” of results. • CO2 is a very powerful greenhouse gas for about the first 20 parts per million. After that, its effect diminishes with each increase. The science on this is clear. <p>In summary, your facts are skewed, and your argumentation is tautological. You ignore the powerful correspondence between solar cycles and climate, despite an abundance of cutting-edge research suggesting that it is indeed the sun that drives climate on Earth by the likes of Henrik Svensmark, among others.</p> <p>It is not the “global warming skeptics” who are the “flat-earthers,” as Al Gore has referred to them. On the contrary, the Galileos of our era are those standing up to the political muscle currently being flexed in the name of Anthropogenic Global Warming.</p> <p>Even if, and it is a huge if, CO2 were raising temperatures (and it’s not), how can you presume to know that this is bad news? How can you presume to know the start date of the next cold phase of the 11,000-year ice-age cycle? Even if we were to successfully raise temperatures on our planet by three or four degrees Fahrenheit, and we haven’t and we won’t, it could be the greatest help in surviving the coming ice age. The climate of the last 11,000 years is unusual, to the extent that the world spends more time in ice ages than it does in benevolent eras like the Holocene Optimum.</p> <p>Ambler, Public Citizen</p> | <p>increase further in the future.</p> <p>Models may not be perfect, but they are our best tool for evaluating such potential changes.</p> <p>It is true that each incremental increase in CO2 produces less radiative effect, but that aspect is incorporated in the models.</p> <p>The USP is based on the reproducible results of peer-reviewed research.</p> <p>The timing of the ice ages is based on orbital mechanics and the next ice age is not due for a long, long time. What are the impacts of a warming world on the United States? That is exactly what the USP tried to document.</p> |
| P | Angel | Gen | | | <p>Did you know that the phrase "heavy downpour" appeared 46 times in the document? While I understand that it is a significant and pervasive theme w.r.t. climate change, I think it becomes belabored at some point in the document. Perhaps it would be better to mention it a few times in key passages and then make a sidebar discussing all the impacts at once. Angel, Illinois State Water Survey</p> | <p>The number of times heavy downpour is used has been cut down.</p> |
| P | Angel | Gen | | | <p>Is it necessary to have so many stock photos in the document (e.g., picture of mosquito when talking about West Nile Virus, someone drinking water when</p> | <p>The number of photographs is being decreased.</p> |

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| | | | | | | <p>talking about water quality and again when talking about heat waves). That technique works well in brochures but in a 208 page, 34 mb document, I found that it became distracting after a while.</p> <p>Angel, Illinois State Water Survey</p> | |
| | P | Bailey | Gen* | | | <p>(1) Carbon Dioxide is a natural organic gas whose presence as a trace element in the earth,s atmosphere is essential to life on earth. Any attempt to reduce carbon dioxide in the earth,s atmosphere threatens the existence of all life on earth.</p> <p>(2) It is mathematically impossible for carbon dioxide at present and predicted future concentration levels to have any measurable effect on the earth,s temperature.</p> <p>Consider the formula below which is the basic thermodynamic equation used for calculating changes in heat energy in a body (solid, liquid or gas).</p> <p>Energy = Mass x Specific Heat x rise in temperature. The Mass of the earth,s surface and atmosphere is so great that a concentration of carbon dioxide of 1000 ppm (twice present levels), which is 0.1 % of the atmospheric mass, is so small when compared to the mass of the earth that it has no influence on the above calculation. Climate change will or will not occur regardless of what the human race does or does not do.</p> <p>Energy = Mass x Specific Heat x rise in temperature. The Mass of the earth,s surface and atmosphere is so great that a concentration of carbon dioxide of 1000 ppm (twice present levels), which is 0.1 % of the atmospheric mass, is so small when compared to the mass of the earth that it has no influence on the above calculation. Climate change will or will not occur regardless of what the human race does or does not do.</p> <p>The Mass of the earth,s surface and atmosphere is so great that a concentration of carbon dioxide of 1000 ppm (twice present levels), which is 0.1 % of the atmospheric mass, is so small when compared to the mass of the earth that it has no influence on the above calculation.</p> <p>Climate change will or will not occur regardless of what the human race does or does</p> | <p>1. Carbon dioxide is indeed natural but at a lower level then current. Limiting the increase in carbon dioxide is different than removing carbon dioxide from the atmosphere.</p> <p>2. Quantum physics and the results of reproducible tests published in the peer-reviewed literature indicate differently. Please see IPCC WG I section 1.4.1.</p> <p>The radiative effect of a gas is not dependent on its mass but on its radiative properties.</p> <p>The results of scientific tests in the peer-reviewed literature indicates differently.</p> <p>Please see IPCC WG I FAQ 1.3. The greenhouse effect is real and vital for life on earth. The question is what are the impacts of humans increasing the greenhouse effect.</p> <p>Thank you for the comment, but that is not what the science</p> |

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| | | | | | not do. Bailey, Public Citizen | indicates. |
| P | Bartholow | Gen* | | | Where is the data showing the breakdown in sources of carbon dioxide emissions: Total, then man-made versus natural. The paper shows no apparent resolve to change the natural emissions so I'd like to know what amount & what proportion that we are looking to resolve due to man-made issues. Quantification is necessary for thinking Americans, otherwise it just sounds like a lot of hype to scare us into an environmentally "Gore-y" agenda that I (and many others) disagree with and I disagree with such "one-sided studies" being funded by our tax dollars. Bartholow, Public Citizen | The natural contribution to carbon dioxide is large. But, as the figure on page 18 indicates, the natural contribution of carbon dioxide is completely balanced by the natural removal of carbon dioxide. The increase in carbon dioxide is, therefore, a result of human induced changes such as burning fossil fuels. |
| P | Bartlett | Gen* | | | The attached short article deals with the deficiency in two major reports on global warming. I hope this deficiency is not in your report. (Note: Article copied into Appendix) Bartlett, Prof. Emeritus of Physics, University of Colorado | The deficiency mentioned is relating population growth to climate change. The new report has a description of the scenarios of future greenhouse gas emissions used. One difference in the scenarios is assumptions about population growth. This is now stated. |
| P | Beery | Gen* | | | Your reference to polar bears study by the U.S. Geological survey did not pass the test for forecasting as cited by INFORMMS Journal . The authors examined < http://usgs.gov/newsroom/special/polar_bears/ >nine U.S. Geological Survey Administrative Reports. HANOVER, MD, May 8, 2008 – Research done by the U.S. Department of the Interior to determine if global warming threatens the polar bear population is so flawed that it cannot be used to justify listing the polar bear as an endangered species, according to a study being published later this year in Interfaces, a journal of the Institute for Operations Research and the Management Sciences (INFORMS®). Beery, Private Citizen | As its scientific name implies, Ursus maritimus, relies on sea ice for its existence. The report you cited quotes the author as saying, "the most appropriate forecast [of polar bear numbers] is to assume that the upward trend would continue for a few years, then level off." This forecast approach makes sense if based on historical data with no expectations that sea ice would decrease. However, the sea ice that polar bears depend on is decreasing rapidly and projected to decrease further in the future. The USP clearly describes the dependency polar bears have on sea ice and the projections of sea ice changes. |
| P | Bensen | Gen* | | | In fact the planet is actively cooling. CO2 has not been proven to be a forcing agent. There is no science behind this. No one has presented any evidence of any kind. Computer models are not the real world. Since the computer models do not even predict the weather or the even global temperatures those models are worthless. Models should lead to real world experiments that prove or disprove the theory. Hansen can't do it. Al Gore can't do it. It can't be done because the models are wrong and there simply is no evidence. | Thank you for the comment, but the data indicate that the planet is not cooling. The next version of the USP will include more detailed descriptions of computer models and what they can and can not do. Laboratory experiments with chambers that have different amounts of CO2 and exposure to infrared radiation confirm the greenhouse effect of increasing CO2 concentrations. |

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| | | | | | <p>Now that the volcanos under the arctic that were active last year are quiet again there is record ice in the arctic this summer at the height of the hot weather.</p> <p>Glaciers are growing all over the world. Well, not a Kilimanjaro because the deforestation has robbed the area of moisture and not because of Man's Sinful Global Warming.</p> <p>It is pathetic to watch you try to prove man's responsibility for climatic warming when the Earth has proven you all to be either liars or fools. The planet is cooling. The Sun is silent and inactive. The planet is cooling.</p> <p>Man-made CO2 is 3% of all the CO2. It cannot have any effect.</p> <p>You have a religion; you have no evidence only your faith that it is true.</p> <p>I laugh now but as you struggle to keep you dignity as the evidence against you continues to pile up it is not going to be that funny; it will be pathetic.</p> <p>Bensen, Public Citizen</p> | <p>Arctic ice melt is unrelated to local volcanic activity. The USP presents the latest observations of Arctic sea ice.</p> <p>The data clearly indicate that glaciers are receding in almost all parts of the world. See IPCC WG I figure 4.15.</p> <p>The data clearly indicate the planet is warming. Glaciers are receding. Plants are blooming earlier in the spring. Lake and rivers are freezing later in the fall. Etc.</p> <p>Natural sources and sinks of CO2 were in balance so the rise in CO2 is due to man's contribution.</p> <p>What matters are the results of reproducible tests. Please see IPCC WG I, section 1.2.</p> <p>Thank you for your comment.</p> |
| P | Bourne and Martin | Gen | | | <p>Letter to Wm. Brennan from Heartland Institute (and submitted as part of public review). Introduction</p> <p>The Heartland Institute is a national nonprofit research and education organization dedicated to discovering, developing, and promoting free market solutions to current social and economic issues. Our focus is primarily environmental regulation, school reform, health care reform, budget and tax issues, and telecommunications regulation. Our publications are distributed to over 8,300 state and national elected officials and approximately 8,400 local government officials.</p> <p>We are writing in response to the release of the U.S. Climate Change Science Program's (CCSP) Draft Unified Synthesis Product Report: Global Climate Change in the United States (Synthesis Report) (Footnote: U.S. Climate Change Science Program, Draft Unified Synthesis Product Report: Global Climate Change in the United States; Notice of Availability and request for public comment, Federal Register 73(138): 41042; July 17, 2008.) on July 17, 2008. The Heartland Institute specifically requests that the Federal Register notice be withdrawn until such time that the underlying Synthesis and Assessment Products are publicly available as required under the Information Quality Act</p> | <p>The USP is complying with all relevant rules and regulations.</p> |

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| | | | | | | <p>and the membership of the advisory committee that produced the report is properly constituted in compliance with the Federal Advisory Committee Act.</p> <p>Noncompliance with Information Quality Act</p> <p>On July 17, 2008, the National and Atmospheric Administration (NOAA) published a Synthesis Report notice of availability and request for public comment in the Federal Register with an announcement of a 28-day public comment period. The Synthesis Report is designed to be an integrative summary of 21 Synthesis and Assessment Products (SAPs) of the CCSP. It includes selected conclusions from the U.N. Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report and other summaries from studies that have appeared in the scientific literature up until 2006.</p> <p>Unfortunately, many of the underlying SAPs have not yet been completed and the public cannot review or judge the reliability and credibility of the Synthesis Report. The Synthesis Report indicates that the SAPs may be available by October 2008, well after the public comment period ends on August 14, 2008. Such transparency or access to the SAP's is required under the Data Quality Act and is necessary to comply with the requirements of the Information Quality Act and guidelines established under said Act. "Agencies shall treat information quality as integral to every step of an agency's development of information, including creation, collection, maintenance, and dissemination." (Footnote: Section 515, Treasury and General Government Appropriations Act for Fiscal Year 2001; Public Law 106-554; 44 U.S.C. §3516, note Federal Register 8452.)</p> <p>The issuance of the CCSP's draft Synthesis Report on July 17, 2008 without all 21 of the SAPs was premature and fails to comply with the Information Quality Act.</p> <p>Page 15 of the Synthesis Report specifically states the goal of the report, "The goal of this report is to make the key results of the enormous body of scientific information about climate change and its impact on the United States accessible in a single plain English document that can help inform the public and private decision making at all levels." The reference to key results indicates that all 21 CCSP SAPs have been included, yet only 8 CCSP SAPs have been completed to date.</p> <p>As in any research methodology, this omission of data and lack of transparency places serious doubt on the ability of scientists, technicians, and other members of the public to review the document for reliability and credibility as a scientific guideline for climate change policy that calls for the regulation of greenhouse gas emissions.</p> | <p>Most SAPs have been released in draft form. Some are pending final approval. But this final step should not alter any of the science that the SAP documented. The USP will not cite any SAP that is not available. But at the current time that will likely only be one of the 21 SAPs.</p> <p>See note above.</p> <p>This sentence has been modified to make it clear that the USP will not include information from any SAPs that will not be released, at least in draft form, prior to the release of the USP.</p> <p>The revised version reflects an increased effort at transparency and referencing of peer-reviewed literature sources of information used in the report.</p> |

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| | | | | | | <p>The agency attempts to work around the language of the Information Quality Act by stating on the CCSP website that report is being released “solely for the purpose of pre-dissemination peer review under applicable information quality guidelines”. This new interpretation of the guidelines is unsubstantiated and conflicts with the definition of the term “dissemination” as found in the Office of Management and Budget’s Final Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility and Integrity of Information Disseminated by Federal Agencies which states that dissemination is defined to mean “agency initiated or sponsored distribution of information to the public” whether that information is the agency’s own or that of a third party.”</p> <p>Clearly, the CCSP draft synthesis report was published in the Federal Register, the officially recognized vehicle for public dissemination of government information and should be treated as such under the Information Quality Act.</p> <p>Noncompliance With the Federal Advisory Committee Act</p> <p>The Synthesis Report was produced by an advisory committee to the U.S. Department of Commerce operating under the Federal Advisory Committee Act, 5 U.S.C. Appx. §§1 et seq. (“FACA”). Section 5(b)(2) of FACA “require[s] the membership of the advisory committee to be fairly balanced in terms of the points of view represented and the functions to be performed by the advisory committee.”</p> <p>The committee that produced the Synthesis Report is not fairly balanced and therefore violates FACA. The Synthesis Report should be stricken and the committee reconstituted to comply with FACA’s balance requirements.</p> <p>Legal Framework</p> <p>The Court of Appeals for the District of Columbia explained the requirement of balance as follows:</p> <p>[T]he Senate report on the Act states that “legislation [establishing an advisory committee] shall . . . require that membership of the advisory committee shall be representative of those who have a direct interest in the purpose of such committee.” S. REP. NO. 1098, 92d Cong., 2d Sess. 9 (1972). Referring to this statement, this court has noted that the Act’s “legislative history makes clear, [that] the ‘fairly balanced’ requirement was designed to ensure that persons or</p> | <p>The USP is complying with all relevant rules and regulations.</p> <p>The USP is complying with all relevant rules and regulations.</p> <p>The USP FACA incorporates a wide range of expertise to bear on a wide range of impacts.</p> <p>The USP FACA incorporates a wide range of expertise to bear on a wide range of impacts.</p> <p>The USP is complying with all relevant rules and regulations.</p> |

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| | | | | | | <p>groups directly affected by the work of a particular advisory committee would have some representation on the committee.”</p> <p>Public Citizen v. National Advisory Committee on Microbiological Criteria for Foods, 866 F.2d 419, 423 (D.C. Cir. 1989).</p> <p>FACA imposes two types of balance requirements: (1) point-of-view balance; and (2) functional balance. Cargill, Incorporated v. United States of America, 173 F.3d 323, 335 (5th Cir. 1999). If the function of the committee is narrow, balance can be achieved without broad representation of varied points-of-view. Id. at 337-38. The converse is also true, however. An advisory committee tasked with broad functions must include broad point-of-view representation. Id.</p> <p>The Committee’s Broad Functional Tasks The committee’s core function is to predict the climate change impacts. This in itself is an extremely broad function, as it gauges climate change impacts on society, human health, energy production and use, transportation, water resources, agricultural and land resources, and natural environment and biodiversity, both nationwide and by sections of the country.</p> <p>But the Synthesis Report explicitly admits that its function is even broader than its core function. First, more than 10% of the Report is devoted to alarmist “science” purporting to document that climate change is taking place and that it is induced by man-made emissions. (Report at 16-41.)</p> <p>Second, the Synthesis Report proposes a wide range of measures that ought to be taken by industry, agriculture, and government in response to climate change:</p> <p>[The report] also deals with some of the things society can do to respond to the climate challenge. Comparing the impacts of a range of heat-trapping gas emissions scenarios reveals differences related to the consequences of various emissions pathways, highlighting the choices we have with regard to human induced emissions. This report also explores some options for adapting to climate change and its impacts that could help in coping with the amount of additional warming that is inevitable as a result of past and ongoing emissions of heat-trapping gases and other human-induced emissions.</p> | <p>The USP FACA incorporates a wide range of expertise to bear on a wide range of impacts.</p> <p>Rather than jump into the impacts, the FACA team determined that it was important to provide the scientific basis of climate change, documenting how the climate is changing and what the models are projecting for the future.</p> <p>The report now provides adaptation examples rather than describe adaptation strategies.</p> <p>Thank you for your comment.</p> |

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| | | | | | | <p>(Report at 14.) The Synthesis Report continues:</p> <p>Most scientific research has focused on understanding the nature, causes, and impacts of climate change, and estimating the human contribution to these changes. Considerably less attention has been paid to the portfolio of approaches that will be needed to respond to the problem of human-induced climate change. Items in this portfolio include reducing emissions of heat-trapping gases, as well as developing measures to adapt to the amount of warming that is not prevented through such reductions.</p> <p>Id. at 12. The Synthesis Report identifies measures that should be taken by several sectors of the economy—most prominently, the energy industry:</p> <p>Throughout this report, the impacts of climate change will be viewed through the lens of our possible responses. Comparing impacts for low and high emission scenarios highlights the choices society faces with regard to levels of heat-trapping emissions. Options for reducing these emissions are often referred to as “mitigation” and include improved energy efficiency, using energy sources that don’t produce carbon dioxide or produce less of it, capturing and storing carbon dioxide from fossil fuel use, and so on.</p> <p>***</p> <p>The other major category of response strategies is known as “adaptation,” which refers to changes made to better respond to present or future circumstances. This includes deliberately adjusting to actual or anticipated changed conditions to avoid or reduce negative impacts or to take advantage of positive ones.</p> <p>Id.</p> <p>The Synthesis Report’s advice for the agricultural sector is sweeping. Farmers should develop new types of crops, a high-cost proposition. Id. at 95, 105. Livestock products should be changed, “a much more extreme, high-risk, and in most cases, high-cost option than changing crop varieties.” Id. at 105. Farmers should also change their use of water, fertilizers, herbicides, and pesticides. Id. at 95. Water may have to be rationed, which also “will increase costs for the</p> | <p>Thank you for your comment.</p> <p>Thank you for your comment.</p> <p>Thank you for your comment.</p> <p>Thank you for your comment.</p> |

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| | | | | | <p>farmer. Id.</p> <p>The Synthesis Report also identifies adaptation measures for business in general, which should consider relocating important office centers away from coastal areas. Id. at 12.</p> <p>Last, the Synthesis Report proposes several measures that should be taken by state and local governments. Building codes should encourage “green” buildings and make them more resistant to fires and extreme weather events. Id. at 12-13. But most radical is the Report’s suggestion that state and local governments should consider relocating their residents away from coastal zones. Id. at 13.</p> <p>Committee Composition In light of the committee’s broad functions, its composition is unbalanced and violates FACA.</p> <p>All but one of its 30 members are either university professors or federal government employees. Nearly one-third of its members are biological scientists. It includes, among others, one employee of the U.S. Department of Agriculture (crop specialist), one specialist in transportation/regional planning, two climatologists, two atmospheric scientists, three meteorologists, one drought specialist, one energy systems analyst for the U.S. Department of Energy, one M.D., and one MBA/water scientist. One member is a lawyer and one is a writer.</p> <p>Initially, this committee is not competent to evaluate and opine on whether man-induced climate change is actually taking place. Fully half of its members contributed to one or more of the U.N.’s Intergovernmental Panel on Climate Change reports, whose work has been discredited by sound scientists. See Nature, Not Human Activity, Rules the Climate, published by Heartland for the Nongovernmental International Panel on Climate Change (“NIPCC Report”) in March 2008. Scientists unswayed by global warming alarmism and who are committed to sound, dispassionate, and non-political science must be included on the committee.</p> <p>Furthermore, as discussed above, the committee’s membership is unbalanced when it comes to performance of its massive core function of evaluating the impacts of</p> | <p>This section has now been rewritten to provide clearer adaptation examples.</p> <p>The report now provides adaptation examples rather than describe adaptation strategies.</p> <p>The USP is complying with all relevant rules and regulations.</p> <p>The USP FACA incorporates a wide range of expertise to bear on a wide range of impacts.</p> <p>The USP FACA incorporates a wide range of expertise to bear on a wide range of impacts. This includes considerable expertise in climate change detection and attribution. The IPCC results are based on the peer-reviewed literature and have not been discredited. Please see IPCC WG I, section 1.2 on how it is not the opinion of scientists that matter but rather the results of reproducible tests.</p> <p>The USP FACA incorporates a wide range of expertise to bear on a wide range of impacts. For example, the “one government energy</p> |

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| | | | | | | <p>climate change on society, human health, energy production and use, transportation, water resources, agricultural and land resources, and natural environment and biodiversity. The last category can be addressed by about half of the committee membership. But the remaining categories fall within the educational/professional experiences of either one or none of the committee members. The committee includes no sociologists, one doctor, one government energy bureaucrat, one transportation analyst specializing in traffic congestion and air quality, and one agriculturalist with the U.S.D.A.</p> <p>Last, the committee’s function includes making recommendations for massively complicated regulatory and private sector responses to climate change. The committee is unbalanced on these subjects and is therefore incompetent to make such recommendations, as follows:</p> <ol style="list-style-type: none"> 1. Even though the committee opines that 86% of greenhouse gas emissions in the U.S. come from energy production and recommends drastic reductions in such emissions, not one single representative of the energy industry is included on the committee. .2 Even though the committee recommends high-risk and costly changes in agricultural livestock products, not one single expert in this area is included on the committee. 3. Even though the committee recommends shifts in usage of fertilizers, herbicides and pesticides in agriculture, not one single manufacturer or user of these products is included on the committee. 4. Even though the committee recommends business relocations, not one single business executive or business owner is included on the committee. 5. Even though the committee recommends serious changes in the engineering and construction of community structures through building codes, not one single code specialist, architect, construction manager or structural engineer is included on the committee. 6. Even though the committee recommends massive population relocations away | <p>bureaucrat was the coordinating lead author of SAP 4.5 and the “one transportation analyst” was the chair of the Committee on Climate Change and U.S. Transportation which authored the NRC report on climate change and transportation. The depth of their expertise is really quite remarkable.</p> <p>The committee will not make recommendations for massively complicated regulations.</p> <p>The committee does not “opine.” It reports on the results of peer-reviewed research. The coordinating lead author of SAP 4.5, <i>The Effects of Climate Change on Energy Production and Use in the United States</i>, a FACA member, knows the science of energy emissions quite well.</p> <p>The new version of the report does not recommend specific adaptation strategies.</p> <p>The new version of the report does not recommend specific adaptation strategies.</p> <p>The new version of the report does not recommend specific adaptation strategies.</p> <p>The new version of the report does not recommend specific adaptation strategies.</p> |

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| | | | | | | <p>from coastal areas, not one single state or local official from Maine to Florida or from Washington to California is included on the committee.</p> <p>7. Even though the committee recommends massive population relocations away from coastal areas, not one single psychologist, psychiatrist, sociologist or other individual with expertise on the impacts of such massive relocations on individuals’ lives, and any required coping assistance, is included on the committee.</p> <p>8. Even though the committee recommends all of these “adaptations” and more, and even though the committee concedes they will be hugely expensive, not one single economist is included on the committee.</p> <p>All of these groups have a “direct interest” in the committee’s purpose and are “directly affected” by the committee’s work and its Report due to the massive regulation recommended by the committee for these sectors. Without their participation, the committee and its Report are unlawful, illegal, and subject to being stricken.</p> <p>Conclusion The Heartland Institute urges the following corrective measures.</p> <p>The Federal Register notice ought to be withdrawn until such time that the underlying Synthesis and Assessment Products are publicly available as required under the Information Quality Act</p> <p>The Committee should be declared unlawful due to its lack of balance. Its Synthesis Report should be stricken. Following release of the underlying Synthesis and Assessment Products, the Committee should be reconstituted in compliance with FACA. This reconstituted Committee should revisit and revise the Synthesis Report to reflect sound science and realistic analyses of climate impacts based on inputs from the industrial and governmental sectors affected. Economic experts should be included to project the actual costs of compliance with the report’s recommendations. Finally, the NOAA should release its findings in a new report that complies with the Information Quality Act.</p> | <p>adaptation strategies.</p> <p>The new version of the report does not recommend specific adaptation strategies.</p> <p>The new version of the report does not recommend specific adaptation strategies.</p> <p>The USP is complying with all relevant rules and regulations</p> <p>The USP is complying with all relevant rules and regulations</p> <p>The USP is complying with all relevant rules and regulations. The USP FACA incorporates a wide range of expertise to bear on a wide range of impacts. The new version of the report does not recommend specific adaptation strategies.</p> |

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| | | | | | Only after these steps are taken and concluded should the federal government consider the Synthesis Report’s advice. Heartland Institute, Bourne and Martin | Thank you for your comments. |
| P | Carlin | Gen | | | This is one of the least useful “scientific” reports I have ever reviewed. It appears to represent little more than the personal views of the authors with few citations or indications what their views might be based on. It represents their view of how they wish the science was, not how it is. The result of issuing this draft in anything like its present form would be to further inflame the current hostility and suspicion between the “climate skeptics” (CSs) and “anthropogenic global warmists” (AGWs), not resolve it. It needs to be completely rewritten by authors with a much broader perspective before it should even be considered for release as a government report. It generally makes no effort to place probabilities on the conclusions reached and ignores almost all contrary views, which have received extensive attention in journals and the Web. One of the best summaries of the CSs’ views can be found at http://www.friendsofscience.org/assets/documents/FOS%20Essay/Climate_Change_Science.html . By reference, this comment proposes that your revised final report address each and every issue raised by Gregory in this paper without exception. It is only by a detailed discussion of all these issues that CSs may be convinced that the conclusions reached in your report are legitimate. Your present one-sided presentation of the issues will do nothing more than further inflame the current already strongly partisan views on the important scientific issues discussed. It will not persuade a single CS to change his/her views. It will not change the view of a single AGW either since they already accept virtually all the views contained in the draft. So what use is it? The answer is that it is counter-productive. It will result in calls for a complete overhaul of how such reports are prepared and the further estrangement and opposition of the CSs. They will feel that their views are once again being ignored by the establishment and that they will need to redouble their efforts to make themselves heard. As far as I can tell not a single major point currently made by the CSs is really addressed in such a way that they will be convinced that the AGW viewpoint is correct. Rather what is needed is a point-by-point discussion of each of the CSs’ major points and an impartial discussion of the evidence for and against each. Up until now US CSs could blame the IPCC for presenting what they believe is a one-sided and incorrect view of the science. This draft is actually even more one-sided and lacking in objectivity than the IPCC report. If | <p>The next draft of the report will be heavily referenced so that it is clear that the report is not reflecting the views of the authors but their synthesis of the peer reviewed research.</p> <p>The new draft will include more specific references to probabilities and likelihoods.</p> <p>Addressing every point raised in any web page is far beyond the scope of this report.</p> <p>The USP presents the results of reproducible tests. Please see IPCC WG I, section 1.2 which explains that it is not the opinion of scientists that matter but the results of their tests.</p> <p>The goal of the USP is to present the latest information on climate change impacts in the United States in a manner that is easily accessible to anyone.</p> <p>The report synthesizes the latest findings of the peer-reviewed</p> |

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| | | | | | <p>issued in anything like its current form this report will be a call to arms by CSs. What is needed is to discard this draft report and start over again with a totally new group of authors representing a very broad diversity of viewpoints on climate change and objectively discuss all the major issues that have been raised by the CSs in detail.</p> <p>Carlin, Public Citizen</p> | <p>literature. A point by point discussion of each Climate Skeptic's view is beyond the scope of this report.</p> <p>Thank you for your comment.</p> |
| P | Carlin | Gen | | | <p>There is no discussion of the uselessness of GHG emissions reductions by the US without similar reductions by most major emitters in the world. Rather, the report appears to advocate US reductions without regard to what the rest of the world does or does not do, or at the very least does not make this critical distinction clear. Reductions by the US only would only harm the US economy and accomplish next to nothing. Nothing in this draft is likely to cause the foreign opponents of GHG emissions reductions to change their minds since it does not address their concerns.</p> <p>Carlin, Public Citizen</p> | <p>The USP specifically avoids policy recommendations with regard to US and global emission decisions.</p> |
| P | Carlin | Gen | | | <p>Entire draft report with minor reference to page 155: One of the many serious problems with the report is the apparent fact that it does not really deal with the relationship between regional climate oscillations and climate change. Ian Wilson has found that there is an almost perfect relationship (http://www.lavoisier.com.au/papers/articles/IanwilsonForum2008.pdf)—i.e., global temperature trends vary almost perfectly with changes in the PDO in the period since 1880. This is in sharp contrast with the relationship with ambient CO2 levels, which cannot explain either the 1940-75 or the post-1998downtrends in global temperatures. Keenlyside et al. (Nature 453: 84-88) blame the NAO for the recent sharp decreases in global temperatures whichwere not anticipated by the IPCC report and which also appear not to be dealt with in this report. Keenlyside et al. was published after the IPCC report, but your draft became available afterwards, so there is no excuse in the case of your report. So why is this not dealt with in your draft reportG The onlymention of the PDO appears to be on page 155, which deals with changes in the movement of fish stocks. If changes in global temperatures are mainly determined by changes in the PDO (as Wilson and others believe), why is this not discussed in great detailG And what influences the PDOG Could it be solar variabilityG</p> <p>Carlin, Public Citizen</p> | <p>The USP focuses on long-term changes in the climate. Periodic changes due to PDO and NAO and ENSO are more in the domain of climate variability than in climate change. The global climate may pulse in accord to fluctuations of these various oscillations, but these oscillations cannot explain the long-term warming. Which is why they were not included in the USP. Keenlyside et al. (2005) specifically states that “our results suggest that global surface temperature may not increase over the next decade, as natural climate variations in the North Atlantic and tropical Pacific temporarily offset the projected anthropogenic warming.” Note it is only a temporary offset.</p> |
| P | Center for Biological | Gen | | | <p>We commend the CCSP for incorporating information from recent scientific studies on climate change published in the past two years into sections of this report,</p> | <p>Thank you for your comment.</p> |

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| | Diversity | | | | <p>which provides important updates to information presented in the IPCC and SAP reports. In subsequent comments, we have noted where additional citations to recent studies could be added.</p> <p>Center for Biological Diversity</p> | |
| P | Cheetham | Gen* | | | <p>The alarmist tone of the report is counter-productive to society. The empirical data do not support the hypothetical conjectures made in the report. (Note: Comments included figure – see Appendix to Collation #2)</p> <p>Cheetham, Public Citizen</p> | <p>The tone in the new draft has been modified to more closely resemble that of a dispassionate scientist.</p> |
| P | Christy | Gen | | | <p>Introduction: Frankly, I am stunned at this document. I see here not a scientific synthesis of the myriad of issues and views regarding climate change, but a straightforward, unscientific attempt at advocacy. It really must go back to the drawing board before people like me will take it seriously.</p> <p>Please note, I tried to write this response in an interesting way so that it would actually be read by some of the authors. Also, the editors believed the review comments would be simply a set of fine-tuning remarks in a few places so that short, specific comments are the only type that would be examined. This document is so pervasively misrepresentative of the science that a legitimate review requires a broader-based explanation of its shortcomings.</p> <p>Ponderings I'm wondering if the Administration has been too clever-by-half here. By letting a collection of one-sided authors, who share common views on the topic, serve as their own writers and final reviewers (hardly a peer-review process), they have created the opportunity for the complete dismissal of the whole project! Could this Administration be that clever? (Probably not.) Or, is this strategy (enlisting a one-sided set of authors) an attempt to neutralize the Democratic party's traditional hold on the niche political issue of climate change (i.e. thereby aiding the Republican's chances in the Fall election)? Or, is this just a bad ending to a problematic set of CCSP reports?</p> <p>How should I respond – as someone who has significant influence on climate policy in my state (and those surrounding) and in the congressional delegation it represents? One choice is to let this report go through and after it is published simply demonstrate how unscientific it is to policymakers so that it will be</p> | <p>The tone in the new draft is more carefully scrubbed to avoid any indications of advocacy and instead adopt a tone more akin to a dispassionate scientist.</p> <p>Your comment is noted.</p> <p>While we can not comment on the Administration, the USP presents the results of reproducible tests in the peer-reviewed literature. Please see IPCC WG I section 1.2 for a description of how it is not the views of the scientists that matter but rather the results of their tests.</p> <p>The peer and public review process is designed to help make the report as good as it can be. So all comments are taken seriously.</p> |

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| | | | | | | <p>dismissed. Or, should I try to introduce a major CHANGE in the emphasis of the report so that it in someway reflects the complicated issues it is tasked to address? To hope for such a change, I would offer as a face-saving reason for a radical rewrite that “new information, not available in previous CCSP reports, has come to light which creates new uncertainties.”</p> <p>I’ll try the second route, though I doubt there will be any effect as the authors have rather obviously shown their biases in this Draft. My feeling here is that the current set of CCSP authors will work hard to find a way to ignore the many evidences of controversy, uncertainty and of our famous inabilities with regard to the climate questions facing us. If so, then the CCSP cannot be viewed as a science document with a purpose of supplying useful information to our nation.</p> <p>Fatal Problems I was going to go through the “Key Findings” (should be “Key Opinions” on pg. 6-7) and provide evidence to show how they are misleading, incomplete or simply erroneous. But that would take far too much time. Rather the following solution will suffice.</p> <p>To make this document accurate, the following should be placed before or after these findings.</p> <p>The following (previous) “Key Findings” and many other statements in this document are the opinions of these selected authors and others who might agree. However, several, well-published climate scientists believe these findings are misleading, incomplete and/or erroneous. These other scientists believe the authors have (a) failed to express the considerable uncertainty which still inhabits this topic and (b) overstated with unacceptable confidence dramatic and alarming conclusions as if they were unassailable and unquestionable facts.</p> <p>The above is an accurate statement that if ignored is further verification that it is true. There will be such criticism of this document, assuming no major overhaul, that our science will sink lower and lower in the public’s esteem. There are clearly other views of this issue, based on peer-reviewed literature, and they must be expressed, acknowledged and allowed to be communicated to our nation under the banner of a government report.</p> | <p>Your comment is noted.</p> <p>The key findings section has been thoroughly revised. However, the report will not discuss the beliefs of scientists, neither on the FACA nor certainly off the FACA. But will instead attempt to synthesize the results of the peer-reviewed research.</p> <p>This comment contains a logical fallacy that is impossible to overcome where not admitting to X proves X. The quest of the USP is not to describe every point that has appeared in the peer-reviewed literature but rather to present a synthesis of the results in the peer-reviewed literature.</p> |

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| | | | | | | <p>The Hockey Stick again? I was assaulted on page 19 by the infamous Hockey Stick which the National Research Council Report specifically examined. In that report, we (I was a member of the panel) found that the criticisms by McIntyre and McKitric, and essentially those of the Wegmann Report, were valid. The non-centered reconstruction methodology and a near zero skill in the independent comparison were serious shortcomings of the HS. The tremendous dependence on the Bristle Cone pine was to lead to ambiguous outcomes. To make matters worse in this CCSP Draft, we are shown the Hockey Stick with observational data spliced to the end (updated paleoclimate records do not show the spike in temperatures and the spread of current results in the past 1000 years is quite large and ambiguous.) This image was placed in the report to alarm, not to educate. It represents old and discredited methods and it is startling to me that it was even considered, but fits the style of the report as a dogmatic depiction of pending disaster which gives the allusion of precise and perfect knowledge. Leaving the Hockey Stick in will give ample ammo for a very credible charge of bias and distortion.</p> <p>Overstated confidence More generally, I was struck by the immaturity of this report in describing what the climate has done, how the climate operates and what trajectory it might take (which no one truly knows). As I indicated, it read as a report written by an advocacy organization, not as an unbiased presentation of the wide range of views on regional, national, and global climate changes supported in the peer-reviewed literature.</p> <p>The climate system is characterized by enormous complexity on all spatial and time scales – a level of complexity our science has failed to report in omnibus assessments to policy-makers and the public. Many of our scientists have bordered on arrogance in promoting a level of understanding that is simply not there. This document provides an opportunity to correct this overstated confidence in spite of the pressure placed upon (and by) the authors to exaggerate our level of knowledge and to conceal our ignorance.</p> <p>Projections here are based on climate model simulations for which there is strong</p> | <p>Please see IPCC WG I page 467 for figures merging paleo and instrumental data. The revised USP incorporates such information based on up to date peer-reviewed information.</p> <p>The report has been scrubbed to incorporate appropriate likelihood statements to more precisely convey an accurate representation of what the observations and model projections indicate as reported in the peer-reviewed literature.</p> <p>The report has been scrubbed to incorporate appropriate likelihood statements to more precisely convey an accurate representation of what the observations and model projections indicate as reported in the peer-reviewed literature.</p> <p>The new draft includes a section discussing models' abilities and</p> |

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| | | | | | | <p>evidence that the presumed sensitivity of the climate, hard-wired into the models, is considerably overstated (e.g. estimates of sensitivity from independent methods are showing negative feedback responses to heating, not positive, which therefore diminish the accumulation of energy in the system, e.g. Schwartz 2006, Spencer 2007, 2008 etc.) I offer one small piece of hard evidence in Fig. 1. Here is one of the more famous modeled global temperatures (GISS-E) of the MSU channel 2 data. Even when the modeler knew what the answers were up through 2003, the trajectory and character of the shorter-term variations of the two datasets can be statistically shown to be significantly different (i.e. falsified.)</p> <p>(NOTE: MSU2 Models and Observations figure inserted in comment. Is on digital file, if needed for reference.</p> <p>Fig. 1 Even with knowledge of the values through 2003, (e.g. volcanic eruptions) this prominent model simulation (red and orange lines) which is almost exactly the same as the IPCC Best Estimate, overshoots the tropospheric temperature observations (blue line) by significant amounts. Any agreement prior to 2003 is due to the fact the modeler knew the results to that point. Note too that the model is completely incapable of representing the true faster-scale variance of the climate system – crucial because these faster time scales are those on which the energy processes operate. Recent research shows that the climate system adjusts in such a way as to rapidly exhaust any build-up of heat to space. Hence the evidence indicates the climate sensitivity is likely much lower than modeled. (See end of this report for reasons to use UAH satellite data.)</p> <p>To begin to show honesty and integrity for our science, it is a priority for this document to include a statement such as this (this also applies to Key Finding 1 pg. 6):</p> <p>It is conceivable that virtually all of the variability in the last century’s climate of the Southeast, and the U.S. as a whole, is due to factors not related to the emission of greenhouse gases. Projections of the future climate are plagued by uncertainties in physical processes not yet understood as demonstrated by the very low skill in recent tests of regional climate model simulations of the recent climate.</p> <p>Without such a statement, the document reads as one based on a kind of blind faith,</p> | <p>limitations.</p> <p>The new draft includes a section discussing models’ abilities and limitations and the results presented are not based on any one model.</p> <p>The USP strives for the highest level of honesty and integrity.</p> <p>As stated in the USP, there are many factors that influence climate and climate change on a variety of special scales and not all changes are due to greenhouse gases.</p> <p>The revised document has increased and clarified likelihood</p> |

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| | | | | | | <p>ignoring the considerable evidence which counters the notion of the alleged certainty in our understanding of what the climate is doing and why.</p> <p>Surface Temperatures and the Southeast Mean surface temperature, a metric the CCSP seems focused on, is a misleading parameter to understand greenhouse gas impacts. Considerable recent observational and model evidence indicates TMean warming is due more to surface development and its impact on TMin than anything else and this is not mentioned on pg 97 (see Pielke Sr. et al. 2007, Walters et al. 2007, Christy et al. 2006 and references therein.)</p> <p>Not only is the TMean metric not very useful, but pulling tricks with starting dates should be beneath the authors. The use of surface temperature data beginning in the 1970's, especially in the Southeast (pg 124ff, but also pg. 99 for Midwest), is disingenuous and a prime example of cherry-picking. It is not science. Beginning in earlier decades reveals the Southeast has experienced slight long-term cooling, not warming. In other words, natural variability is still the strongest component of what we see on this spatial scale.</p> <p>I notice how clever the authors were in the figure on TMax frequency on page 125 in which they selected the coldest period of the record (1961-1979) as a base. Had they chosen years between 1925 and 1955, when the warmest summers occurred (see Fig. 2 below), it would not be so dramatic. Pulling off stunts like this should be an embarrassment to the authors.</p> <p>(NOTE: Summer temperatures of North Alabama figure inserted here. On digital file)</p> <p>Fig 2 Summer (JJA) temperatures of North Alabama based on a rigorous debiasing technique and approximately 10 times the number of stations used in the area by GHCN (updated through 2007, Christy 2002). Note the selection of 1970 as a starting point for the CCSP assertions about trends (red line) assures a positive value. Had the entire record been included, a slight downward trend would be reported (blue line.) Also, the selection of 1961-1979, the coldest such period in the record, as a base period for a future model projection comparison (pg. 125) is outright fraud.</p> | <p>statements throughout the report to make it more precisely accurate.</p> <p>But we live, work, raise our children, grow our food, etc. on the surface. So surface temperature is most important for impacts. Global Tmean warming is not due mainly to surface development as 70% of the planet and the area observed is ocean which is devoid of surface development.</p> <p>As explained better in the new draft, the surface temperature departures are departures from the period 1970 (1961-1979) because that is when the modeled data we have available start. Where trend maps are shown, they will present the trends over the last 50 years (1958-2007).</p> <p>This figure is being recreated to cover the last 50 years as, coming from observations, it doesn't need to conform to the model available period.</p> <p>The figure is being recreated for the period 1958-2007.</p> |

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| | | | | | | <p>(NOTE: Figure 3-Comparison of observations of 20th century mean temperature trend in the Southeast versus 10 major climate model simulations of the 20th century in the Southeast (on digital file).</p> <p>Rainfall Forecasts: Figure 4 below should lay to rest notions that climate models have regional skill with regard to precipitation changes. There have been several recent papers which have tested regional climate parameters and found them to be falsified as representative of the real climate (e.g. Koutsoyiannis et al. 2008). I note that even with the drought of 2007, Alabama’s precipitation trend is quite positive.</p> <p>(Note: 20th century rainfall figure (on digital file).</p> <p>Mortality Deaths and illnesses due to summer heat stress have fallen. Did any of the authors bother to check the literature on this (e.g. Robert Davis’s papers)? There is no evidence these will increase as our standard of living continues to improve (unless the policy prescriptions apparently promoted by this group of authors makes electricity so expensive no one can afford to use this simple technology to remain cool and safe.)</p> <p>Hurricanes Again, the evidence does not point to an increase in intensity that we can measure. Many publications on this have been ignored by this document. The problem, as I’m sure Pielke Jr. will point out, is that we are building stuff in harms way at an ever faster rate.</p> <p>The West Here the authors have apparently tried to write a disaster-movie script. The evidence does not support the alarming and emotional statements starting on page 136. The use of absolute, declaratory statements (i.e. increasing temperature, drought, wildfire, invasive species will continue to accelerate ...) is simply not science, it is belief.</p> <p>The facts simply don’t line up with the disaster scenario being promoted here. The</p> | <p>The USP now includes a section on model uses and reliability. It should be noted that much of the CONUS lies in an area with hatching indicating that the signal to noise is greater than one. So uncertainties are expressed in this figure.</p> <p>Potential adaptation to future heat stress is now discussed in the report.</p> <p>The language used about hurricanes is coming right out of CCSP SAP 3.3. In addition to building in harms way, hurricane forecasts have improved as have building codes which combine to decrease damages.</p> <p>The text has been scrubbed to provide appropriate likelihood statements wherever possible.</p> <p>The USP as well shows that major droughts occurred in the past.</p> |

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| | | | | | <p>most significant droughts in the West occurred in other centuries prior to the present (any number of tree-ring papers show this as does pg. 137). Indeed a paper just came to my attention this week that the Cascade snowpack trend is not significantly different from zero when going back before the 1950s. Likewise, Mt Shasta’s glaciers are not retreating.</p> <p>Then, further south, here are some new statistics for the Southern Sierra Nevada Mountains:</p> <p>Snowfall trends at 5000 – 7000 ft. +2.2 ±13.3 cm/decade (+0.4%/decade, 1916-2007) Runoff trend (San Joaquin River Basin) +2.4%/decade (1916-2007) Temperature trend 1904-2003 near zero (in the most meticulous reconstruction to date)</p> <p>Regarding claims of fire, in the southern Sierra, the fire ecology shows burns every 2 to 7 years before suppression activities began in the early 20th century. Fire is more a function of management now, not long-term climate change. The fires are getting “worse” due to suppression activities and the fact folks build stuff in the middle of the flammable forests and grasslands, as if to say “I dare you to burn my house.” It’s really not nice to challenge Mother Nature.</p> <p>The evidence does not support the breathless statements of disastrous climate change reported here. It is also telling that the most meticulous reconstruction of California temperatures (and their non-dramatic results) in Christy et al. 2006 was completely ignored by these authors (same for Alabama regarding Christy 2002.)</p> <p>Conclusion Below I have a figure for those who remember 1988 accompanied by a little discussion, but I want to stop my comments here. You’ve gotten the idea by now. I’m almost of a mind not to fight this select group anymore with real data and give them enough freedom and shovels to dig the deepest hole they can with this Hollywood-style script. However, I just don’t want our science to be viewed as a joke – and documents like this will assure that outcome. Please make this a scientific document with all views expressed, with the multitude of caveats</p> | <p>The peer reviewed literature indicates that fire is not only a function of management but also a function of climate change.</p> <p>Climate change analyses for the United States is based on large scale analysis of USHCN Version 2 and not merging isolated studies of a few small regions.</p> <p>The revised version of the USP has made the document feel more like a science presentation and incorporates caveats and likelihood statements where appropriate. Rather than incorporating all views, the basis of the document is still the peer reviewed literature.</p> |

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| | | | | | | <p>climate science demands and with acknowledgments that we are still significantly ignorant of many of the processes that impact the climate system. When I think about it, if I have to make a plea to this group for good science, it is already too late.</p> <p>For history buffs. This figure below was added for history buffs, to remind ourselves of our inability to predict. The warm color lines above are the surface temperature projections for the globe from J. Hansen as reported in 1988 for his three scenarios (all datasets referenced to 1979-1981). The purple line represents his most recent prediction (2005) having seen what had happened since 1988 through 2003. The light blue is the global tropospheric temperature observations from UAH satellite data adjusted to match surface variance (note, last point is Jan-Jun 2008 and will likely not be so negative as the remainder of the year unfolds with a fading La Niña.)</p> <p>Note: GISS Forecasts and UAH LT (Sfc Adj) figure inserted (on digital file)</p> <p>A note about the UAH data in a couple of the plots. I use UAH data here not only because it is readily available to me as the builder but because multiple papers now show that RSS data (and to a greater degree Umd) contains a very likely spurious warming shift in the 1990s. This published claim is backed up by several, independent findings in a number of papers and utilizes (1) comparison with surface data (2) comparison with US VIZ radiosondes (3) comparison with Australian radiosondes (4) comparisons with simple statistical retrieval methods (e.g. Fu type) (5) comparison with windowed trends and (6) comparison with model output (RSS was the only dataset of 6 observed datasets and several model simulations which indicated significant tropical tropospheric warming in the three years after the Mt. Pinatubo eruption.) These and other results also show that CCSP SAP 1.1 is clearly out of date.</p> <p>Secondly, I use satellite bulk measurements because they will not be measurably affected by changes in the nocturnal boundary layer due to surface development which impact TMin with significant warming (of which the figure description on pg 97 seems unaware). With that in mind, the UAH lower tropospheric temperature was adjusted to show the same variance as the surface temperature</p> | <p>Noted.</p> <p>The revised USP generally does not discuss changes in temperature of the troposphere because all the impacts are at the surface.</p> <p>Minimum temperature, as shown in Pielke et al. 2007, is impacted by wind. Yet minimum temperatures have tremendous impacts on agriculture and forestry.</p> |

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| | | | | | in the “History Buff” plot. The comparison with GISS-E in the MSU2 figure is apples to apples (MSU2 model values provided by Hansen.) Christy, University of Alabama in Huntsville | |
| P | D’Aleo | Gen | | | Note: Dr. D’Aleo has sent in 2 sets of comments which contains multiple figures and graphs. The two sets of comments have all been placed in the Appendix. | |
| P | D’Aleo | Gen | | | <p>(1) Arctic sea ice and the large ice sheets on Greenland and parts of Antarctica are melting faster than expected. Page 6</p> <p>(2) The Greenland Ice Sheet has also been experiencing record amounts of surface melting in recent years. Studies suggest that the surface melt water is flowing down to the base of the ice sheet, providing lubrication that causes the ice to flow more easily to the sea, speeding the loss of ice. Page 24</p> <p>(3) Global sea level rise has been projected to rise 1 to 2 feet during this century, but these estimates purposefully do not include the accelerated melting of the Greenland and West Antarctic ice sheets that many scientists think is likely to occur. Several recent projections suggest that sea level rise by the end of this century could be 3 to 5 feet, especially in subsiding coastal areas. Page 153</p> <p>CORRECTION IS REQUIRED</p> <p>These described changes in Greenland and the arctic are not at all unprecedented nor are they are described. This happens predictably every 60 years or so and is in fact entirely natural, related to multidecadal ocean cycles and possibly recently accentuated by major undersea volcanism and the invasion of tundra shrubs and deposition of soot from Asia.</p> <p>Records of arctic ice cover extent start in 1979. Multidecadal cyclical warming was observed before in the 1800s and middle 1900s long before the industrial revolution. Also there is more recent evidence showing the idea of lubrication by melt water accelerating loss of glacial or icecap ice is not valid.</p> <p>THE OCEAN MULTIDECADAL CYCLES</p> | <p>This statement has been removed from the report.</p> <p>Greenland is no longer discussed in the report.</p> <p>This comment has been modified. Subsidence along the Gulf Coast in particular is significant with SAP 4.7 indicating that a 4 foot sea level rise locally is a plausible estimate for mid-Century.</p> <p>Discussions of Greenland have been removed from the report.</p> <p>As stated, the full period of record of Arctic sea ice extent is shown. Variations in the 1800s are not as well known. Details on glacier melt mechanisms have been removed from the report.</p> |


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| | | | | | <p>The natural multidecadal cycles in the Pacific (called the Pacific Decadal Oscillation or PDO) and Atlantic (called the Atlantic Multidecadal Oscillation or AMO) correlate strongly with temperatures over Greenland and the arctic.</p> <p>In early May 2008, a paper appeared in Nature (Keenlyside) showing how by including long term ocean cycles in models the recent global cooling or at least lack of warming may continue to 2020. The same week, a story by NASA’s Earth Observatory reported on the flip of the Pacific Decadal Oscillation to its cool mode. “This multi-year Pacific Decadal Oscillation ‘cool’ trend can intensify La Niña or diminish El Niño impacts around the Pacific basin,” said Bill Patzert, an oceanographer and climatologist at NASA’s Jet Propulsion Laboratory, Pasadena, Calif. “The persistence of this large-scale pattern tells us there is much more than an isolated La Niña occurring in the Pacific Ocean.”</p> <p>GREENLAND</p> <p>Many recent studies have addressed Greenland ice mass balance. They yield a broad picture of slight inland thickening and strong near-coastal thinning, primarily in the south along fast-moving outlet glaciers. AR4 assessment of the data and techniques suggests overall mass balance of the Greenland Ice Sheet ranging between growth by 25 Gigatonnes per year (Gt/year) and shrinkage by 60 Gt/year for 1961-2003. This range changes to shrinkage by 50 to 100 Gt/year for 1993-2003 and by even higher rates between 2003 and 2005.</p> <p>Most recently a study by van de Waal in Science showed as the New Scientist reported that “Much noise has been made about how water lubricates the base of Greenland’s ice sheet, accelerating its slide into the oceans. In a rare "good news" announcement, climatologists now say the ice may not be in such a hurry to throw itself into the water after all. Mother Nature, it seems, has given it brakes.</p> <p>Since 1991, the western edge of Greenland’s ice sheet has actually slowed its ocean-bound progress by 10%, say the team, who have studied the longest available record of ice and water flow in the region.” They looked at how meltwater has correlated with the speed of ice flow at the western edge of the sheet, just north of the Arctic Circle, since 1991. They found that meltwater pouring down holes in the ice – called "moulins" – did indeed cause ice velocities to skyrocket, from their typical 100m per year to up to 400m per year, within days or weeks.</p> <p>But the acceleration was short-lived, and ice velocities usually returned to normal</p> | <p>Correlations with decadal-scale climate variability is not the focus of this report. This report focuses on long-term climate change.</p> <p>Keenlyside et al. (2005) specifically states that “our results suggest that global surface temperature may not increase over the next decade, as natural climate variations in the North Atlantic and tropical Pacific temporarily offset the projected anthropogenic warming.” Note it is only a temporary offset.</p> <p>Discussion of Greenland ice has been removed from the report.</p> <p>Discussion of Greenland ice has been removed from the report.</p> <p>Discussion of Greenland ice has been removed from the report.</p> |

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| | | | | | | <p>within a week after the waters began draining. Over the course of the 17 years, the flow of the ice sheet actually decreased slightly, in some parts by as much as 10%.</p> <p>"For some time, glaciologists believed that more meltwater equaled higher ice speeds," van de Waal says. "This would be kind of disastrous, but apparently it is not happening."</p> <p>Van de Waal believes that the channels that carry the meltwater out to sea freeze up during the winter months. In summer, pulses of water rushing down the moulins to the bedrock overwhelm the narrowed channels, and the increased pressure lifts the ice sheet off the rock, enabling it to move faster.</p> <p>However, after a few days the channels are forced open by the water, and it drains away from the glacier. As a result, the ice grinds back down against the bedrock and the lubricant effect is lost. NO LUBRICATION: Van De Waal says this indicates that, overall, meltwater has a negligible effect on the rate at which the ice sheet moves."</p> <p>(Note: Figure inserted here. Part of electronic file)</p> <p>Other scientists have confirmed that interannual variability is very large, driven mainly by variability in summer melting and sudden glacier accelerations. Consequently, the short time interval covered by instrumental data is of concern in separating fluctuations from trends. But in a paper published in Science in February 2007, Dr. Ian Howat of the University of Washington reports that two of the largest glaciers have suddenly slowed, bringing the rate of melting last year down to near the previous rate. At one glacier, Kangerdlugssuaq, "average thinning over the glacier during the summer of 2006 declined to near zero, with some apparent thickening in areas on the main trunk."</p> <p>Dr. Howat in a follow-up interview with the New York Times went on to add</p> <p>"Greenland was about as warm or warmer in the 1930's and 40's, and many of the glaciers were smaller than they are now. This was a period of rapid glacier shrinkage world-wide, followed by at least partial re-expansion during a colder period from the 1950's to the 1980's. Of course, we don't know very much about how the glacier dynamics changed then because we didn't have satellites to observe it. However, it does suggest that large variations in ice sheet dynamics can occur from natural climate variability."</p> | <p>Discussion of Greenland ice has been removed from the report.</p> <p>Discussion of Greenland ice has been removed from the report.</p> <p>Discussion of Greenland ice has been removed from the report.</p> <p>Discussion of Greenland ice has been removed from the report.</p> <p>Discussion of Greenland ice has been removed from the report.</p> <p>Discussion of Greenland ice has been removed from the report.</p> |

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| | | | | | <p>Thomas, et al. (2000) showed great variance in mass balance of the Greenland ice sheet with highly variable thickening and thinning depending on location. This February (2008) during a bitter cold winter, Denmark's Meteorological Institute stated that the ice between Canada and southwest Greenland reached its greatest extent in 15 years.</p> <p>Temperatures were warmer in the 1930s and 1940s in Greenland. They cooled back to the levels of the 1880s by the 1980s and 1990s. In a GRL paper in 2003, Hanna and Cappelen showed a significant cooling trend for eight stations in coastal southern Greenland from 1958 to 2001 (-1.29°C for the 44 years). The temperature trend represented a strong negative correlation with increasing CO2 levels.</p> <p>Shown below in figure 2, see the temperature plot for Godthab Nuuk in southwest Greenland. Note how closely the temperatures track with the AMO (which is a measure of the Atlantic temperatures 0 to 70N). It shows that cooling from the late 1950s to the late 1990s even as greenhouse gases rose steadily, a negative correlation over almost 5 decades. The rise after the middle 1990s was due to the flip of the AMO into its warm phase. They have not yet reached the level of the 1930s and 1940s.</p> <p>(Note: Figure inserted here. Part of electronic file)</p> <p>A SIMILAR STORY IN THE ARCTIC</p> <p>Warming in the arctic is likewise shown to be cyclical in nature. This was acknowledged in the AR4 which mentioned the prior warming and ice reduction in the 1930s and 1940s. Warming results in part from the reduction of arctic ice extent because of flows of the warm water associated with the warm phases of the PDO and AMO into the arctic from the Pacific through the Bering Straits and the far North Atlantic and the Norwegian Current.</p> <p>Hartmann et al., 2005 showed how the rapid Great Pacific Climate Shift that was the change of the PDO from cold to warm in 1977 produced stepladder discontinuities in Alaskan temperatures.</p> <p>Polyakov et al (2002) created a temperature record using stations north of 62 degrees N. The late 1930s-early 1940s were clearly the warmest of the last century. In</p> | <p>Discussion of Greenland ice has been removed from the report.</p> <p>Discussion of Greenland ice has been removed from the report.</p> <p>Discussion of Greenland ice has been removed from the report.</p> <p>As shown in the Arctic Climate Assessment, the observed temperatures do show a cycle, but the cold cycle of the 1960s was not as cold as the cold cycle of the 1910s and the warm cycle of the last 20 years is warmer on average than the warm cycle of the 1930s and '40s, though isolated years in the 1930s may have been warmer than most individual years in the last 20 years – but this is true for the CONUS as well as discussed on page 33. So there is more at work here than just cycles. Some of the cycles mentioned in this comment are not really cyclical. For example, the AMO is usually defined as the residual after removing a linear trend. So long-term warming is, by definition, impacts the signal. Alternate ways to calculate the AMO, such as removing the global non-Atlantic ocean temperatures comes up with a very different AMO. Furthermore, the</p> |

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| | | | | | | <p>addition, the numbers of available observations in the late 1930s-early 1940s (slightly more than 50) is comparable to recent decades. The annual temperatures are plotted in figure 3.</p> <p>(Note: Figure inserted here. Part of electronic file)</p> <p>Pryzbylak (2000) says:</p> <p>“There exists an agreement in estimating temperature tendencies prior to 1950. Practically all (old and new) of the papers which cover this time period concentrate on the analysis of the significant warming which occurred in the Arctic from 1920 to about 1940. Estimates of the areal average Arctic temperature trend in the second half of the 20th century are inconsistent.</p> <p>“The second phase of contemporary global warming in the Arctic [since 1970] is either very weakly marked or even not seen at all. For example, the mean rate of warming in the last 5-year period in the Arctic was 2–3 times lower than for the globe as a whole.</p> <p>“In the Arctic, the highest temperatures since the beginning of instrumental observation occurred clearly in the 1930s. Moreover, it has been shown that even in the 1950s the temperature was higher than in the last 10 years.”</p> <p>In Vinnikov, et al (1999), the authors use the warming in recent decades as supposed verification of the GFDL and Hadley Center models. They acknowledge a lack of data in the 1940s. Polyakov (2003) showed ice extent time series with a combination of decadal and multidecadal tendencies, with lower values prior to the 1920s, in the late 1930s to 1940s and in recent decades. They showed higher values in the 1920s to early 1930s and 1960s-1970s, similar to variability in temperature records. It is impossible to find a consistent long term trend in the data plots</p> <p>The Japan Agency for Marine-Earth Science and Technology in Yokosuka, Kanagawa Prefecture observed in a story in Yahoo Asia News in 2005 an ice shrinkage in the western Arctic Ocean from 1997 to 1998 that they attributed to “... by the flow to the area of warm water from the Pacific Ocean, not by atmospheric impact as previously thought”. This was related to the super El Nino of 1997/98. JAMSTEC's Koji Shimada, the group's sub-leader, said the</p> | <p>ice extent from 1900 to 2003 does not show such cycles. Rather it is fairly level from 1900 to 1950 and then decreases fairly steadily from then to 2003. The exact causal mechanism for ice melt in different parts of the Arctic, e.g., a pulse of warm water entering through a particular straight, is too detailed for inclusion in this document. Climate change is complex and anthropogenic warming is bound to impact atmospheric and oceanic circulations. So attributing a cause to particular circulation pattern changes, especially but not only when the pattern uses long-term warming in its definition, does not negate the secular changes that are happening in the ocean and atmosphere.</p> <p>See comment above.</p> <p>See comment above.</p> <p>See comment above.</p> <p>See comment above.</p> |

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| | | | | | | <p>shrinkage was particularly severe in the Pacific side of the Arctic Ocean. The ocean's ratio of area covered with ice during the summer stood at about 60-80 percent from the 1980s to mid-1990s, but it went down to 15-30 percent after 1998, he said.</p> <p>THE IMPORTANCE OF THE ATLANTIC Of the two oceans, for the larger arctic basin, the Atlantic may be more important. Przybylak (2000) noted that</p> <p>“For arctic temperature, the most important factor is a change in the atmospheric circulation over the North Atlantic” The influence of the atmospheric circulation changes over the Pacific (both in the northern end and in the tropical parts) is significantly lower”</p> <p>Rigor, et al (2002) suggest that the Arctic Oscillation (AO) affects surface air temperatures and sea ice thickness over the Arctic in a profound way. Ice thickness responds primarily to surface winds changes caused by the AO. Positive AO values (as have been observed in recent years) correspond to higher wind speeds (and generally thinner ice).</p> <p>The North Atlantic Oscillation and the Arctic Oscillation (also referred to as the NAM) are related to the AMO as we reported on in the last post here.</p> <p>As noted in the AR4, the relationship is a little more robust for the cold (negative AMO) phase than with the warm (positive) AMO. There tends to be considerable intraseasonal variability of these indices that relate to other factors (stratospheric warming and cooling events that are correlated with the Quasi-Biennial Oscillation or QBO for example).</p> <p>Hass and Eicken (2001) and Proshutinsky and Johnson (1997) showed how arctic circulations vary from cyclonic to anticyclonic depending on strength and position of Icelandic low and Siberian highs. The latter paper noting the tendencies for the regimes to last 5-7 years and help explain the basin scale changes in arctic temperatures and the variability of ice conditions in the Arctic Ocean. Vennegas and Mysak (2000) found four dominant signals, with periods of about 6–7, 9–10, 16–20, and 30–50 year. These signals account for about</p> | <p>See comment above.</p> <p>See comment above.</p> <p>See comment above.</p> <p>See comment above.</p> |

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|  | | | | | | <p>60%–70% of the variance in their respective frequency bands. All of them appear in the monthly (year-round) data. They noted penetration of Atlantic waters into the arctic is affected by the North Atlantic Oscillation and multidecadal changes in the Norwegian Current.</p> <p>As was the case for US temperatures, the combination of the PDO and AMO Indexes (PDO+AMO) again has considerable explanatory power for Arctic average temperature, yielding an r-squared of 0.73 (figure 4). (Note: Figure inserted here. Part of electronic file)</p> <p>Karlen (2005) reported on historical temperatures in Svalbard (Lufthavn, at 78 deg N latitude), claiming that the area represents a large portion of the Arctic. It is reported that the “mean annual temperature increased rapidly from the 1910s to the late 1930s.” Later, temperatures dropped, “and a minimum was reached around 1970.” Once again, “Svalbard thereafter became warmer, but the mean temperature in the late 1990s was still slightly cooler than it was in the late 1930s.”</p> <p>Karlen goes on to say that similar trends (warm 1930s, cooling until about 1970, minor warming since) have occurred in Arctic areas of the North Atlantic, in northern Siberia, and in Alaska. At Stockholm, where records go back 250 years, “changes of the same magnitude as in the 1900s occurred between 1770 and 1800, and distinct but smaller fluctuations occurred around 1825.”</p> <p>Finally, in view of the fact that “during the 50 years in which the atmospheric concentration of CO2 has increased considerably, the temperature has decreased,” Karlen concludes that “the Arctic temperature data do not support the models predicting that there will be a critical future warming of the climate because of an increased concentration of CO2 in the atmosphere.”</p> <p>Drinkwater (2006) concluded that “in the 1920s and 1930s, there was a dramatic warming of the air and ocean temperatures in the northern North Atlantic and the high Arctic, with the largest changes occurring north of 60°N,” which “led to reduced ice cover in the Arctic and subarctic regions and higher sea temperatures.” This was “the most significant regime shift experienced in the North Atlantic in the 20th century.”</p> <p>During the late 1920s, “average air temperatures began to rise rapidly and continued to do so through the 1930s.” In this period, “mean annual air temperatures increased by approximately 0.5-1°C and the cumulative sums of anomalies varied from 1.5 to 6°C between 1920 and 1940 with the higher values occurring</p> | <p>See comment above.</p> <p>See comment above.</p> <p>See comment above.</p> <p>See comment above.</p> <p>See comment above.</p> <p>See comment above.</p> |


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| | | | | | <p>in West Greenland and Iceland." Later, "through the 1940s and 1950s air temperatures in the northernmost regions varied but generally remained relatively high." Temperatures declined in the late 1960s in the northwest Atlantic and somewhat earlier in the northeast Atlantic.</p> <p>Hanna, et al (2006) estimated Sea Surface Temperatures (SSTs) near Iceland over a 119-year period based on measurements made at ten coastal stations located between latitudes 63°N and 67°N. They concluded that there had been "generally cold conditions during the late nineteenth and early twentieth centuries; strong warming in the 1920s, with peak SSTs typically being attained around 1940; and cooling thereafter until the 1970s, followed once again by warming - but not generally back up to the level of the 1930s/1940s warm period."</p> <p>THE EFFECT ON ICE COVER</p> <p>Both the Atlantic and Pacific play roles in arctic ice extent. Trenberth in 1994 talked about the warming of the western arctic following El Ninos by warming of the waters from the North Pacific. Joyce et al. also found decadal scale major shifts in hydrological variability in the North Pacific that related to the PDO.</p> <p>(Note: Figure inserted here. Part of electronic file)</p> <p>The sea ice extent diminished following the Great Pacific Climate Shift (flip of the PDO to positive) in the late 1970s (figure 5). It stayed relatively stable until the last few years when a more precipitous decline began (figure 6), related to a spike in North Atlantic warmth and a positive AO.</p> <p>(Note: Figure inserted here. Part of electronic file)</p> <p>Dmitrenko and Polyokov (2003) observed that warm Atlantic water in the early 2000s from the warm AMO that developed in the middle 1990s had made its way under the ice to off of the arctic coast of Siberia where it thinned the ice by 30% much as it did when it happened in the last warm AMO period from the 1880s to 1930s. Polyakov had previously concluded (2002)</p> <p>"Arctic and northern hemispheric air-temperature trends during the 20th century (when multi-decadal variability had little net effect on computed trends) are similar, and do not support the predicted polar amplification of global warming. The possible moderating role of sea ice cannot be conclusively identified with existing data. If long-term trends are accepted as a valid measure of climate change, then the SAT and ice data do not support the proposed polar amplification of global warming."</p> | <p>See comment above.</p> <p>See comment above.</p> <p>See comment above.</p> <p>See comment above.</p> <p>See comment above.</p> |

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| | | | | | | <p>Rutger’s Jennifer Frances (GRL) in 2007 showed how the warming in the arctic and the enhanced ice melting was in part the result of warm water (+3C) in the Barents Sea in the far North Atlantic moving into the Siberian arctic. The positive feedback of changed “albedo” or reflectivity due to open water then acts to enhance the warming.</p> <p>We can see in figure 7 how the Atlantic warmth peaked in 2004 and 2005 several years ahead of the major decline. Cooling since suggests the ice may slowly recover year to year.</p> <p>(Note: Figure inserted here. Part of electronic file)</p> <p>The University of Colorado’s National Snow and Ice Data Center (NSIDC) summarized the role of the ocean cycles very well in October 2007 in this way:</p> <p>“One prominent researcher, Igor Polyakov at the University of Fairbanks, Alaska, points out that pulses of unusually warm water have been entering the Arctic Ocean from the Atlantic, which several years later are seen in the ocean north of Siberia. These pulses of water are helping to heat the upper Arctic Ocean, contributing to summer ice melt and helping to reduce winter ice growth.</p> <p>Another scientist, Koji Shimada of the Japan Agency for Marine–Earth Science and Technology, reports evidence of changes in ocean circulation in the Pacific side of the Arctic Ocean. Through a complex interaction with declining sea ice, warm water entering the Arctic Ocean through Bering Strait in summer is being shunted from the Alaskan coast into the Arctic Ocean, where it fosters further ice loss.</p> <p>Many questions still remain to be answered, but these changes in ocean circulation may be important keys for understanding the observed loss of Arctic sea ice.”</p> <p>(Note: Figure inserted here. Part of electronic file)</p> <p>UNDERSEA VOLCANIC ACTIVITY IN THE GAKKEL RIDGE</p> <p>As reported by the AFP on the web site Sweetness and Light in June 2008, “Recent massive volcanoes have risen from the ocean floor deep under the Arctic ice cap, spewing plumes of fragmented magma into the sea, scientists who filmed the aftermath reported Wednesday.</p> | <p>See comment above.</p> <p>See comment above.</p> <p>See comment above.</p> <p>See comment above.</p> <p>See comment above.</p> <p>The Arctic Climate Assessment figure showing sea ice from 1900 to 2003 indicates that the amount of sea ice remained fairly stable until about 1950 and then declined to 2003. The decline from 1900 to 1999 can not possibly be due to a volcano in 1999. Furthermore, the</p> |

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| | | | | | | <p>The eruptions — as big as the one that buried Pompei — took place in 1999 along the Gakkel Ridge, an underwater mountain chain snaking 1,800 kilometres (1,100 miles) from the northern tip of Greenland to Siberia.</p> <p>Scientists suspected even at the time that a simultaneous series of earthquakes were linked to these volcanic spasms.</p> <p>But when a team led of scientists led by Robert Sohn of the Woods Hole Oceanographic Institution in Massachusetts finally got a first-ever glimpse of the ocean floor 4,000 meters (13,000 feet) beneath the Arctic pack ice, they were astonished.</p> <p>What they saw was unmistakable evidence of explosive eruptions rather than the gradual secretion of lava bubbling up from Earth’s mantle onto the ocean floor...</p> <p>Scientists at NOAA’s Geophysical Fluid Dynamics Laboratory, the amount in ice began to decline precipitously in around 1999, which is when these volcanoes began their eruption.</p> <p>(Note: Figure inserted here. Part of electronic file)</p> <p>TUNDRA SHRUB AND SOOT INVASION AND ICE MELT</p> <p>Strack et al.(2007 oin the GRL paper showed how invasive shrubs and soot pollution both have the potential to alter the surface energy balance and timing of snow melt in the Arctic. Shrubs reduce the amount of snow lost to sublimation on the tundra during the winter leading to a deeper end-of-winter snowpack. The shrubs also enhance the absorption of energy by the snowpack during the melt season by converting incoming solar radiation to longwave radiation and sensible heat. Soot deposition lowers the albedo of the snow, allowing it to more effectively absorb incoming solar radiation and thus melt faster.</p> <p>This study used the Colorado State University Regional Atmospheric Modeling System version 4.4 (CSU-RAMS 4.4), equipped with an enhanced snow model, to investigate the effects of shrub encroachment and soot deposition on the atmosphere and snowpack in the Kuparuk Basin of Alaska during the May–June melt period. The results of the simulations suggest that a complete invasion of the tundra by shrubs leads to a 2.2C warming of 3 m air temperatures and a 108 m increase in boundary layer depth during the melt period. The snow-free date also occurred 11 d earlier despite having a larger initial snowpack. The results also show that a decrease in the snow albedo of 0.1, owing to soot pollution, caused the snow-free date to occur 5 d earlier. The soot pollution caused a 1.0C</p> | <p>amount of energy released by a volcanic eruption could not melt very much Arctic sea ice. One calculation indicated that the amount of energy in a Mount St. Helens size eruption could melt, if applied only to melting of the sea ice, about 100 square kilometers of ice compared to annual changes in sea ice extent on the order of 10 million square kilometers.</p> <p>The snow melt albedo feedback is a significant enhancement of warming in the Arctic and a portion of that enhancement may be due to surface changes but long-term warming also enhances the snow albedo feedback.</p> <p>Shrub invasions into the tundra can cause a climate feedback. But first the climate has to warm enough for shrubs to be able to survive where once only tundra could.</p> |

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| | | | | | | <p>warming of 3 m air temperatures and a 25 m average deepening of the boundary layer.</p> <p>SUMMARY</p> <p>Multidecadal Oscillations in the Pacific and the Atlantic are acknowledged to be the result of natural processes. When you combine the two cycles, you can explain much of the temperature variances of the past 110 years for Greenland and the Arctic. The warm phase of the PDO and of the AMO also produces warming and enhanced ice melt in Greenland and the Arctic. Warm waters from both ocean basins during the ocean’s warm modes contribute to periodic summer ice decreases approximately every 60 years going back two hundred years. Volcanic activity in the Gakkel Ridge and the invasion of tundra shrubs and soot pollution may also be altering the melting.</p> <p>Greenhouse gases are not the causes of these natural cyclical changes.</p> <p>CHANGES REQUIRED</p> <p>You need to drop the statements above and state instead:</p> <p>Arctic ice melt has increased in in recent years as a result of warm water intrusion into the arctic from the Pacific and especially most recently from the Atlantic. The role of the undersea volcanic activity in the Gakkel Ridge is an unknown but a major eruption there in 1999 preceded the most recent rapid ice decline. There is evidence that the invasion of tundra shrubs and soot pollution may be altering the fall ice build up and melting and altering albedo. Similar arctic warmings occurred in the 1930s to 1950s as correctly documented by the IPCC AR4 and in the 1800s according to Siberian oceanographers.</p> <p>Warming in Greenland has not yet reached the levels of the 1930s and 1940s. Temperatures in Greenland were much warmer in prior periods like the Medieval Warm Period (sorry Jonathan, you could not get rid of it – it is real as CO2 Science has documented according to data published by 576 individual scientists from 345 separate research institutions in 38 different countries ... and</p> | <p>See responses above.</p> <p>See responses above.</p> <p>See responses above.</p> |

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| | | | | | | <p>counting!). The idea that rapid melting and lubrication has been proven to be in error by the most recent research.</p> <p>Note: The IPCC estimates of sea level rise and of their assessment that the melting of the Antarctic and Greenland ice sheets is unlikely closer to the truth than your greatly exaggerated ideas and inflated numbers.</p> <p>References: AMS Glossary of Meteorology, Second Edition, 2000 Arctic Climate Assessment (ACIA), 2004. Impacts of a warming Arctic. Cambridge University Press, Cambridge, UK Changnon, S., Winstanley, D.:2004: Insights to Key Questions about Climate Change, Illinois State Water Survey, http://www.sws.uiuc.edu/pubdoc/EM/ISWSIEM2004-01.pdf Christy, J.R., R.W. Spencer and W.D. Braswell, 2000: MSU tropospheric temperatures: Dataset construction and radiosonde comparisons. J. Atmos. Oceanic Tech., 17, 1153-1170. Climate Change Impacts on the United States: The Potential Consequences of Climate Variability and Change National Assessment Synthesis Team USGRCP, June 2000 Delworth, T.L., and M.E. Mann, 2000: Observed and simulated multidecadal variability in the Northern Hemisphere. Climate Dyn., 16, 661-676. Drinkwater, K.F. 2006. The regime shift of the 1920s and 1930s in the North Atlantic. Progress in Oceanography 68: 134-151. Gray, S.T., et al., 2004: A tree-ring based reconstruction of the Atlantic Multidecadal Oscillation since 1567 A.D. Geophys. Res. Lett., 31, L12205, doi:10.1029/2004GL019932 Hanna, E., Jonsson, T., Olafsson, J. and Valdimarsson, H. 2006. Icelandic coastal sea surface temperature records constructed: Putting the pulse on air-sea-climate interactions in the Northern North Atlantic. Part I: Comparison with HadISST1 open-ocean surface temperatures and preliminary analysis of long-term patterns and anomalies of SSTs around Iceland. Journal of Climate 19: 5652-5666. Hartmann, B., Wendler, G., 2005: The Significance of the 1976 Pacific Climate Shift in the Climatology of Alaska, Journal of Climate 18, 4824-4839 Hass, C., Eicken, H., 2001: Interannual Variability of Summer Sea Ice thickness in the Siberian and central Arctic under Different Atmospheric Circulation Regimes, JGR, 106, 4449-4462 Humlum, O., Elberling, B., Hormes, A., Fjordheim, K., Hansen, O.H. and Heinemeier, J. 2005. Late-Holocene glacier growth in Svalbard, documented by subglacial relict vegetation and living soil microbes. The Holocene 15: 396-407 IPCC Fourth Assessment 2007 Johannessewn, O.M., Shalina, E.V., Miles, M. W., (1999): Satellite Evidence for an Arctic Sea Ice Cover in Transformation, Science, 286, 1937-1939 Joyce, T.A., Dunworth-Baker, J., 1994: Long-term Hydrographic Variability in the Northwest Pacific</p> | <p>Noted.</p> |

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|  | | | | | | <p>Ocean, Woods Hole Oceanographic Institution PDF</p> <p>Karlen, W. 2005. Recent global warming: An artifact of a too-short temperature record? <i>Ambio</i> 34: 263-264.</p> <p>Kerr, R. A., A North Atlantic climate pacemaker for the centuries, <i>Science</i>, 288 (5473), 984-1986, 2000.</p> <p>Keenlyside, N. S., Latif, M., Jungclaus, J., Kornblueh, L. & Roeckner, E. <i>Nature</i> 453, 84–88 (2008).</p> <p>Latif, M. and T.P. Barnett, 1994: Causes of decadal climate variability over the North Pacific and North America. <i>Science</i> 266, 634-637.</p> <p>Polyakov, I., Walsh, D., Dmitrenko, I., Colony, R.L. and Timokhov, L.A. 2003a. Arctic Ocean variability derived from historical observations. <i>Geophysical Research Letters</i> 30: 10.1029/2002GL016441.</p> <p>Polyakov, I., Alekseev, G.V., Timokhov, L.A., Bhatt, U.S., Colony, R.L., Simmons, H.L., Walsh, D., Walsh, J.E. and Zakharov, V.F., 2004. Variability of the Intermediate Atlantic Water of the Arctic Ocean over the Last 100 Years. <i>Journal of Climate</i> 17: 4485-4497.</p> <p>Proshutinsky, A.Y., Johnson, M.A., 1997: Two Circulation Regimes of the Wind Driven Arctic, <i>JGR</i>, 102, 12493-12514</p> <p>Przybylak, R., 2000, Temporal And Spatial Variation Of Surface Air Temperature Over The Period Of Instrumental Observations In The Arctic, <i>Intl Journal of Climatology</i>, 20: 587–614</p> <p>Rigor, I.G., Wallace, J.M. and Colony, R.L., 2002. Response of Sea Ice to the Arctic Oscillation. <i>Journal of Climate</i> 15: 2648-2663.</p> <p>Rothrock, D.A., Yu, Y., Maykut, G.A., 1999: Thinning of the Arctic Sea-Ice Cover, <i>GRL</i>, 26, no23 3469-3472</p> <p>Strack, J. E., R. A. Pielke Sr., and G. E. Liston (2007), Arctic tundra shrub invasion and soot deposition: Consequences for spring snowmelt and near-surface air temperatures, <i>J. Geophys. Res.</i>, 112, G04S44, doi:10.1029/2006JG000297.</p> <p>Thomas, R., Akins, T., Csatho, B., Fahenstock, M., Goglneni, P., Kim, C., Sonntag, J., (2000): Mass Balance of the Greenland Ice Sheet at High Elevations, <i>Science</i>, 289, 427</p> <p>Trenberth, K.E., and J.W. Hurrell, 1999: Decadal atmosphere-ocean variations in the Pacific. <i>Clim. Dyn.</i>, 9, 303-319.</p> <p>Van De Waal, R.S., 2008, <i>Science</i>, vol 321, 111</p> <p>Venegas, S.A., Mysak, L.A., 2000: Is There a Dominant Time scale of Natural Climate Variability in the Arctic, <i>Journal of Climate</i>, October 2000,13, 3412-3424</p> <p>Wadhams, P., Davis, N.R., 2000: Further Evidence of Ice thinning in the Arctic Ocean, <i>GRL</i>, 27, 3973-3975</p> <p>Winsor, P.,(2001) Arctic Sea ice Thickness Remained Constant During the 1990s: <i>GRL</i> 28, no6 1039-1041</p> <p>D'Aleo, Fellow of AMS</p> | |
| | P | D'Aleo | Gen* | | | <p>Mr. D'Aleo has sent in a third set of comments on Oceans and Solar. They are copied in the Appendix, as they have a number of figures.</p> <p>D'Aleo, Fellow of AMS</p> | Noted. |

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| P | Darr | Gen* | | | An essential trace gas is not a pollutant !!!!! Are you trying to bankrupt America????? Darr, Public Citizen | CO2 is indeed essential to life. But that should not prevent us from recognizing its role in causing climate change. |
| P | Davis | Gen | | | PLEASE NOTE: I do not wish to be acknowledged in any way in the final report. You do not have my permission to indicate that I served as a “reviewer” or “contributor” or to in any way imply that I endorse the report. General: The emphasis of my review is on the “Society” and “Human Health” sections, but I also briefly reviewed the “Regional Climate Change Impacts” section. I presume the purpose of this report is to emphasize all of the theoretically possible negative impacts that might occur in a “worst-case scenario” rather than a report that reflects the current state of the climate change literature. I could easily prepare a similar report about all of the great benefits that will arise in the United States from climate change, but none of these ideas have been included in this draft. The uninformed reader (i.e., the public, reporters, and policy-makers) upon reading this report will be lead to believe that a terrible disaster is soon to befall the United States from human-induced climate change and that all of the impacts will be negative and devastating. Of course, if the purpose here is not really to produce an unbiased review of the impact of climate change on the United States, but a political document that will give cover for EPA’s decision to regulate carbon dioxide, then there is really no reason to go through the ruse of gathering comments from scientists knowledgeable about the issues, as the only science that is relevant is selected work that fits the authors’ pre-existing paradigm. The most honorable action would be to pull the report and start over, perhaps by finding some scientists who are aware of the ongoing debates in the refereed literature. Given that this is unlikely, then the following sentence should be added to the report’s introduction: “This report is not intended to be an unbiased review of climate change science; rather, it is a political document that emphasizes the worst possible theorized impacts of climate change in the hopes that the U.S. Government will use this | Your request is noted and will be complied with. The purpose of the report is to synthesize what the peer reviewed literature indicates about climate change impacts on the United States. Where positive impacts are possible, they are mentioned, such as the changing crop hardiness zone maps. However, because systems, both human and natural, have adapted to the historical climate, any change in climate (whether warming or cooling) would cause disruptions. The report has undergone a major revision. As stated above, that is not correct so this recommended change is rejected. |

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| | | | | | <p>report in support of a decision to regulate carbon dioxide emissions.”</p> <p>With that precis, I doubt that you will utilize many of my comments, which argue for balance. A review of the body of work in my career includes papers that both support and counter your paradigm on climate change. In other words, I did science.</p> <p>Davis, University of Virginia</p> | <p>All comments have been reviewed and, where appropriate, changes have been made in the report.</p> |
| P | Doughty | Gen | | | <p>The current draft of the USP is at best, misleading, and at worst, pure science fiction. The prejudiced assumptions, particularly that current and projected climatic conditions are significantly influenced by human emissions, are flawed in the extreme. It is not physically possible for CO2 to act as a primary forcing agent for climate change. NASA should take a more even-handed approach to climate research. If this is representative of the caliber of NASA climatic research, NASA should divorce itself entirely from the subject, and reject the entire USP to avoid the inevitable embarrassment that will result from the unequivocal observation of global cooling that will be obvious to all but the most diehard anthropogenic global warming fanatics within the next 10 years.</p> <p>Doughty, Public Citizen</p> | <p>The reproducible test results described in the peer-reviewed literature contradict this comment.</p> |
| P | Endreny | Gen | | | <p>The CCSP National Impacts Report is a well written document that should be kept in its current form. Please makes sure any subsequent edits maintain the accurate reporting on climate change impacts.</p> <p>Endreny, State University of New York</p> | <p>Thank you for your comment. The new draft of the report will be as accurate as possible.</p> |
| P | Firestone | Gen* | | | <p>The entire report is unbalanced and uses selected information from secondary or tertiary sources to support the theory of anthropogenic global warming.</p> <p>It is a polemic filled with scare graphics with no error bars or bands.</p> <p>B. Front Cover The front cover graph (see below) is a prime example. By selecting data it appears to show a dramatic increase in global temperature with an increase in CO2 concentration or vice versa. The left abscissa shows not the global temperature, which is what it should show, but the temperature anomaly from an arbitrary zero. The values on the right abscissa are adjusted so the CO2 concentration crosses the temperature zero at 1980 making it appear that the temperature and the CO2 concentration are correlated, although it appears warming has stopped recently but the increase in CO2</p> | <p>The sources of information used in this report are peer-reviewed papers and syntheses of peer-reviewed research. The balance is determined by the results of this research. The revised version will include more likelihood statements to further clarify error bounds.</p> <p>Correlations are not determined by the absolute value of the two variables being correlated. Global temperatures are traditionally shown as anomalies from a base period. CO2 on the other hand is traditionally shown as concentrations. Altering the relative position of the two graphs of the two variables would not alter the correlation.</p> |

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| | | | | | <p>concentration has not. If the crossing were at 1940 where warming first is shown, the correlation would not be as dramatic but more accurate. There also should be error bands or bars on the graph.</p> <p>Firestone, Public Citizen</p> | |
| P | Fleming | Gen | | | <p>I am concerned about the climate and am still learning. This report appears to take it's cue from Hollywood drama and present Science by sound bite. My first reaction to this document is propaganda. It presents significant information but seems to lack scientific backing. It appears almost desperate. Thank you for the chance to comment and the hard work that was put into this document</p> <p>Fleming, Public Citizen</p> | <p>Thank you for your comment. The next draft will have many more references to document the sources of the information provided. An effort has been made to try to make the material accessible to all readers. But the tone of the next draft will be more towards that of a scientist while still striving to make it accessible to the readers.</p> |
| P | Freitag | Gen* | | | <p>The document overall reads as an advocacy publication not unlike one created by some of the most alarmist environmental NGOs. I would expect a more objective presentation. Much of the material is based on unverifiable conjecture. Its only value appears to be for dramatic effect. Recommend eliminating material based on unlikely or inflated scenarios.</p> <p>Severe bias is indicated by the total lack of any reference to scientists, papers or publications that present or even list other contributions to the changing climate. This undercuts the credibility of the document. Recommend giving proper weight to other contributions for listed affects.</p> <p>Freitag, Public Citizen</p> | <p>The revised version will have a more objective scientist tone.</p> <p>The revised version will be more heavily referenced.</p> |
| P | Frumhoff | Gen | | | <p>Overall Comments: This is a excellent draft, and the authors are to be commended for pulling this together on such short order. I greatly appreciate the plain-English approach to discussing the science and response options, the comparison between emissions scenarios, the accessible graphics and the overall strong organization of the draft. In final form, this will both greatly advance public understanding and set an important precedent for future assessments.</p> <p>A core concern lies the considerable discrepancy between the levels of confidence in the findings as provided in the core sections of the draft report and the cautionary text on the limitations of climate model projections included in the section on "Pathways to Improved Decision-Making." Strengthened integration between this section and the main text will be essential to provide readers with a clearer, more consistent sense of our current understanding, the potential for improvements to strengthen that understanding over time, and the inherent uncertainties associated with local-to-regional scale climate model projections.</p> | <p>Thank you for your comment.</p> <p>Excellent point. The link will be strengthened.</p> |

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| | | | | | Frumhoff, Union of Concerned Scientists | |
| P | Goklany | Gen | | | <p>Thank you for providing the opportunity to review the Unified Synthesis Product (henceforth the “document” or “draft report”). Unfortunately, given the numerous problems in the Executive Summary (ES), and the need to provide comments on them, I haven’t had time to review much of the rest of the document. Accordingly, please don’t mistake lack of detailed comments on material outside the ES as agreement or satisfaction with those portions. In fact, given the quality of the ES, one must be skeptical of the rest of the document.</p> <p>2. Before getting into details, I note that this draft report occasionally forsakes science and strays into non-scientific territory. Some portions read like they are meant to galvanize readers into action rather than serve as a reasoned science piece. This is particularly true for the Executive Summary, which lacks scientific rigor, makes pronouncements for which there is no analytic basis in the document, and makes some statements outside of the CCSP’s competence such as “Will we begin reducing heat trapping emissions now, thereby reducing future climate disruption and its impacts?” (page 4). It is my recommendation that this draft be completely redone, taking into consideration the comments laid out below.</p> <p>3. Following are general comments drawn largely, but not exclusively, from the detailed comments.</p> <ul style="list-style-type: none"> ▪ The ES makes statements regarding the need and urgency for reducing greenhouse gas emissions. But there is nothing in the body of this report that can be used to argue for emission reductions because there is no analysis of mitigation, and how the costs and benefits of mitigation compare with either adaptation and/or “no action”. Before making statements that explicitly or implicitly endorse emission reductions, one should also show that mitigation would reduce damages more economically than adaptation and/or merely living with the damages (e.g., abandoning properties on the coastal margins). In the absence of any such analysis, there’s no scientific case for either explicitly calling for emission reductions or implying that such reductions might be called for. Specifically, the statement — really a rhetorical device — on page 4, “Will we begin reducing heat trapping emissions now, thereby reducing future climate disruption and its impacts?”, goes beyond the realm of science, and CCSP’s competence. It has no place in this document. It is | <p>The Executive Summary has undergone major revision.</p> <p>The Executive Summary has undergone major revision. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> <p>The document relies on two different emissions scenarios to document the projected changes in climate and the differences that following different emission paths will take. The projected impacts are drawn directly from the projected climate change. While the report does describe examples of adaptation it does not delve seriously into mitigation opportunities or costs except in the Pathways section.</p> |

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| | | | | | | <p>CCSP’s job to provide the scientific information that policy makers need to factor into their policy making, and not to try to push society into specific policy actions.</p> <ul style="list-style-type: none"> ▪ Similarly, it is claimed, that “There is a growing urgency in responding to the climate challenge because choices being made now have long-term implications, and delay will be costly. Aggressive near-term actions would be required to alter the future path of human-induced warming and its impacts. Future generations will inherit the legacy of our decisions” (page 4). What is the scientific basis for these statements? “Urgent,” compared to what? “Urgent,” for the US or the global perspective? The notion of something being urgent implies that it’s more important than other problems. Where is the analysis that shows that climate change is more important globally, for instance, than reducing hunger or malaria, or increasing access to clean water, etc., or that it is best to expend resources on climate change mitigation rather than dealing with other problems? In fact, the only comparative analyses of climate change versus other issues conclude that while climate change is important, other problems are more urgent, that society’s resources may be better used dealing with those other problems, and that for the next several decades it is more cost-beneficial to expend resources on adaptation than mitigation (Lomborg 2004; Goklany 2000, 2003, 2005). [References are provided in the detailed comments.] ▪ For a scientific document, there is a curious lack of specificity about the rates and timing of climatic changes upon which the findings in the ES are based. For example, on the first two pages (pp. 4-5) there is no indication as to (a) the timing of the temperature indicated on the roadway, (b) the uncertainties linked with the combination of the magnitude and timing of the temperature changes, and (c) whether the temperature changes refer to average US temperatures including Alaska, just the 48-contiguous states, Northern Hemisphere or global temperatures. But as noted on page 5 of the ES, rates of change are important. Similarly, with respect to the impacts on sectors and regions listed on pp. 8-11, there is nothing in the text that tells us what is the magnitude or rate of climatic change assumed for the impacts specified on these pages. Are we talking about a 0.5°, 5.0°, or 50° change here? Is the change assumed to occur over 10 years, 100 years or longer? What is assumed about adaptive capacity? Without such specificity, a lay reader may conclude (erroneously) that the listed impacts would occur | <p>The scientific basis of these statements are the climate change projections based on different emission scenarios.</p> <p>No, urgent does not imply that it is more important than other problems. Urgent is related to the timeliness of action. As CO2 has a very long lifetime in the atmosphere, impacts of near future fossil fuel burning will occur for decades to come.</p> <p>Pages 4 and 5 and indeed the entire Executive Summary have undergone major revision.</p> |

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| | | | | | | <p>regardless of the magnitude or rate of change, or adaptive capacity. Moreover, in the absence of any information as to the rate or magnitude of climatic change referred to on these pages, one must assume that, unless qualified, the statements listed on these pages apply to any change regardless of its magnitude or rate. But on page 15, the Executive Summary states that: “Statements that are not qualified with such terms are deemed virtually certain.” In light of this, the statements on these pages are absurd. These are examples of the lack of scientific rigor within the Executive Summary.</p> <ul style="list-style-type: none"> ▪ Remarkably, virtually all the impacts on sectors and regions listed on pp. 8-11 of the ES, are negative. Positive impacts should also be listed. These include reduced cold, lower mortality and morbidity from cold and extreme cold, higher agricultural and forest productivity due to higher CO2 and water use efficiency. To the extent the literature on these aspects is sparse, that should be noted, as well as the possibility that might be the result of publication and reporting bias, as hinted in SAP 4.6 (on the literature related to the effects of reduced cold on mortality and morbidity). ▪ There is no discussion of the specific US context and how that has affected and will affect the impacts of and responses to climate change. There is very little discussion of past experience with respect to the impacts of climate change, whether they are growing or not, current and future adaptive capacities, how that was factored into any analyses of impacts, and how sensitive impacts would be to changes in future adaptive capacity. ▪ The discussion on tipping points and abrupt climate change verges on speculation rather than analysis. It misses one of the major points about science and the raison d’etre of the CCSP, which is to help society base its actions on rational analysis rather than speculation. However, there is no discussion of when the specific climatic tipping points are likely to occur, what will be their biophysical and socioeconomic impacts, when are these impacts likely to occur? How certain are we about (a) the occurrence of climatic tipping points, (b) their timing, (c) their impacts, (d) the timings of the impacts, and (e) our inability to cope with the impacts when they occur? In short, we need a risk analysis, but none is provided here. ▪ The ES is marred by selective reporting of information. As previously noted, virtually all the impacts on sectors and regions listed in the ES (pp. 8-11) are negative. Similarly, Finding 2, page 6, notes that many climate changes may be occurring faster than projected. But it overlooks the fact that | <p>The impacts listed are based on what the peer-reviewed research indicates.</p> <p>That is correct. The only part where that is mentioned is in the Pathways section where it is noted that there is inadequate information available to say much about this topic.</p> <p>Again, this lack of specificity is mentioned in the Pathways section as there is currently inadequate information to provide clear statements on this topic.</p> |

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| | | | | | | <p>many others are not. For example, global temperature has not warmed significantly over the past dozen years or so (see e.g., http://vortex.nsstc.uah.edu/public/msu/t2lt/tltglham_5.2), the oceans may not have warmed as much as expected, and there are recent papers that suggest sea level may not be rising as rapidly as suggested by the IPCC's latest report.</p> <ul style="list-style-type: none"> ▪ The report needs to provide the methodology and data used to generate estimates of the amount and rate of climate change that has occurred to the present, particularly for the US (because that is what this document is supposed to cover), so that the estimates provided here can be replicated and verified by other researchers and interested members of the public. The reason for asking for this information is that while there is little doubt (based on phenological information) that climate has warmed over the past several decades, there are problems in quantitatively estimating the total amount and rate of warming, and the portion of the warming in the United States that is due to not just human actions but, more specifically, to well-mixed greenhouse gases. These problems include the following. First, information on a large number of temperature monitoring sites and instrumentation raise the possibility that the instrumental record may be compromised because of inhomogeneities, and siting and maintenance issues (including relocation of stations and monitors in all three dimensions, changes in monitoring equipment and protocols, introduction of heat sources and sinks, and changes in land use and land cover at all geographical scales in and around the stations, etc.) (Watts 2007, 2008; Hale et al. 2006; Pielke et al. 2007a, 2007b). See Appendix A. Second, McKittrick and Michaels (2007) have shown that global temperature trends in climate data seems to be correlated to some extent with socioeconomic variables, which indicates that data may be contaminated by socioeconomic factors, that is, the errors are not random. Third, satellite and ground-based trends differ in the magnitude of the recent trend. Until these issues are comprehensively and definitively addressed — and they are not in this report — quantitative estimates based on these data regarding the magnitude and rate of warming and the proportion of warming that may be attributed to specific causes must be deemed to be unreliable. ▪ Since there is no reason to believe that the US network is worse than other networks around the world, one must also be skeptical about the data from these other networks. In fact, there are several reasons to suspect that most | <p>As stated in the report, human and natural systems are adapted to historical climate. Any changes from the historical climate, either warming or cooling, are bound to have negative effects dominate because the climate would be out of the range that systems have adapted to. Note, your time series is tropospheric, not surface where people live, grow our food, etc.</p> <p>This is now provided in the revised version of the report.</p> <p>There is a large body of literature indicating that homogeneity adjustments are robust and can be used to account for a wide variety of changes in the observing system.</p> |

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| | | | | | | <p>non-US networks probably are plagued by many more problems because the US, being wealthier and having ample human capital at its disposal, has probably (a) devoted relatively more financial and human resources to operating and maintaining its monitoring network, and (b) has had less disruption from wars, domestic upheavals and their aftermath (as may have affected much of Europe from 1914 to perhaps into the 1920s or from the late 1930s to the late 1940s, Russia from 1914 through the 1920s and from the 1930s to the 1940s, China from the 1930s through possibly the 1970s, etc.) Accordingly, the same set of concerns raised in conjunction with the US network also applies to other networks. Has the quality and integrity of these networks and their data been evaluated by the CCSP and/or authors of this report, or are the data they have furnished being adopted in good faith? The CCSP should review these networks and the data they produce before using them in a report that could have significant public policy consequences for the US.</p> <ul style="list-style-type: none"> ▪ Considering the problems associated with the monitoring sites (noted above), it's not clear how the models used for developing climatic changes for the US and its subregions were calibrated, verified and/or validated to accurately reproduce past temperature changes and, therefore, future projections as well. The document should address this. Failing that, it should address why the projections of climate change reported here should be taken seriously. ▪ The phenological changes that have been reported, and which provide, perhaps the best evidence of a changing climate, don't seem to be unique, certainly in the paleo record. For example, droughts have occurred in the West that have been longer and more severe than the spells of the late 20th century. Similarly wildfires, floods, hurricanes, etc. don't seem to be particularly extraordinary when the paleo record is considered. Given this, one cannot automatically rule out natural causes. In fact, there is no analysis furnished here that takes into consideration the cumulative uncertainties in forcings, temperature data, modeling uncertainties, etc. and uses them to rule out the null hypothesis that the current warming and its associated manifestations (such as changes in temperature, precipitation, wind patterns, etc.) are unlikely to be due to natural causes (based on the CCSP definition of "likely" being a two-third chance of occurring — itself not standard scientific convention). | <p>Correlation does not prove causation. Higher latitudes are warming more than low latitudes for valid physical reasons. The economies of higher latitude countries are performing better than the economies of low latitude countries for reasons unrelated to climate change.</p> <p>CCSP 1.1 reconciled the surface and upper air data and the conclusions of CCSP 1.1 have just been verified by a new paper (Santer et al., 2008).</p> <p>There is a large body of literature indicating that homogeneity adjustments are robust and can be used to account for a wide variety of changes in the observing system.</p> <p>There is now a section describing the models and model use. However, details of calibration and validation of all the models is beyond the scope of the report.</p> <p>The revised report deals more directly with uncertainties and describes the models more thoroughly. The Global section explains why it is possible to attribute the recent temperature rise to increasing greenhouse forcing.</p> |

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| | | | | | | <ul style="list-style-type: none"> ▪ There is a tendency in this document to treat recent trends as harbingers of future long term trends. For example, there is the statement (previously noted) that some changes are happening faster than anticipated. Similarly, Key Finding 4 states that “Atlantic hurricane intensity has increased in recent decades...” But data going back to 1970 or so are too short to be used to make definitive statements about whether changes in intensity are due to climatic trends, short term natural variability, improvement in detection technologies with enhanced spatial and temporal resolution, or a combination of all these factors. In the long term context, it’s not clear whether these changes, if any, are outside the bounds of natural variability. ▪ The document claims that there are “limits to adaptation” (e.g., p. 5). Intuitively we have always known that, but this document should prove that and also try to lay out what precisely are the limits in the US (for various sectors and regions) and what determines those limits. Absent that, the document does not bring any added value to our understanding of responses to climate change that an intelligent lay person may not have determined on her own without the expenditures of research dollars by the CCSP. ▪ Considering that the characterization of “likely” and “very likely” used in this report are not standard, these terms should be defined up front so that the reader who skims the Executive Summary understands what these terms do and don’t signify rather than have to wait till page 15 to figure out what these terms signified. Importantly, since it is not standard, readers should be cautioned that that the terms “likely” and “very likely” have nothing to do with terms such as “statistically significant” that many may vaguely recall from their old college days as being a (relatively) high hurdle, which by informal convention was for decades set at 95% or 97.5%. In fact, without specific language explicitly noting this, many lay readers are likely to be misled (at the 66% level!) that there is a relationship between these terms. And one of the functions of writing a scientific report is to reduce the likelihood of being misunderstood. ▪ It’s not clear from the description provided on page 15 how precisely various outcomes and projections were determined by the “team” to be “likely” (or not) or “very likely” (or not), and “virtually certain” (or not). There should be greater discussion of the precise methodologies employed, the specific criteria used to decide whether something is deemed to be “likely,” etc., with a few examples as to how the methodologies and criteria were actually | <p>Statements about potential future hurricane intensification are not derived from statistical analysis going back to 1970 or going back to 1900. They are based on CCSP 3.3 which assessed the physics of hurricane strengthening.</p> <p>Page 5 has been significantly rewritten. Adaptation is now primarily addressed by providing examples of adaptation measures in current use. The Pathways section provides descriptions of the limits of current adaptation data.</p> <p>Agreed. Likely and very likely are now defined up front.</p> <p>This is now described in greater detail in the About this Report section.</p> |

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| | | | | | | <p>implemented, and include a discussion addressing the following points: Would random sets of scientists looking at the identical information come to the same determinations? Are the determinations objective and reproducible? What is the evidence for that? On the other hand, if the criteria and their implementation are not objective or reproducible, one must question their inclusion in a scientific document.</p> <ul style="list-style-type: none"> ▪ I recognize that this is a summary document, but because it is also a scientific report, methodological issues must necessarily be discussed, however briefly. Moreover, although space within the hard copy of the document is limited, it is still incumbent upon CCSP to provide other researchers and the general public the requisite information to be able to replicate and verify its findings and statements, and there ought to be enough space on the CCSP servers to furnish detailed, and readily-accessible, information. Accordingly, CCSP should (a) archive the precise methodologies used to arrive at these determinations, (b) show how these methodologies were implemented, and (c) make this material readily accessible on a CCSP website, in case other researchers and members of the general public want to try to reproduce them. ▪ The discussion of adaptation is very narrowly conceived and seems to be based on a deterministic paradigm that we know (or shall know) the consequences of climate change in time and place and we'll plan adaptations around that (perhaps via central planning). However, there are other complementary approaches, which may be more successful and efficient than the one discussed here, considering the uncertainties surrounding modeling not only climate changes but its biophysical and socioeconomic impacts in both time and space. ▪ There seems to be tendency in the discussion on adaptation to favor centralized planning versus decentralized approaches. But it should be noted that if centralized approaches fail, they fail big, whereas if decentralized approaches fail, the losses can generally be less extensive, and therefore more easily managed from society's point of view. This is one of the most important lessons of the 20th century. Decentralized approaches, such as those embodied in the free market system, have generally been far more successful than centralized approaches (compare for example, South v N Korea, China before and after market liberalization, East v West Germany) in advancing human well-being. That failure of centralized approaches can | <p>Data and model output used in this report will be made available on-line. Details about how each use of the term likely or very likely was determined is beyond the scope of what can be made available. Statistical appendices of relevant CCSP SAPs will be referred to provide appropriate detail on the statistics used.</p> <p>The adaptation aspect of the report is now more narrowly confined primarily to examples of adaptation measures currently underway.</p> <p>Adaptation in the current draft of the report discusses many decentralized approaches, such as the various decisions farmers make. But in general, adaptation in the revised report is limited to examples, both large and small.</p> |

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| | | | | | | <p>be exceedingly disastrous is also hinted by the events surrounding Hurricane Katrina where the real disaster was the result of the failure of the levee, rather than the Hurricane itself. And nothing embodies central planning better than a levee of that kind.</p> <ul style="list-style-type: none"> ▪ Many of the figures don't specify sources that they were taken or derived from (see, e.g., pages 17-19), and frequently don't include error estimates (which themselves vary with time). This is contrary to scientific convention. This ought to be rectified. If the methodologies and the data used to generate them are too extensive to include in this document itself, please provide links to websites that contain the requisite information, and can be readily accessed by other researchers and members of the general public who may be interested in verifying and/or reproducing the information conveyed in these diagrams. ▪ Based on a quick word search of the document, there seems to be no discussion in the document about whether or how climate, biophysical and socioeconomic models are calibrated, verified or validated for specific regions (and sectors) of the US, or how they have performed when tested against observed data sets that did not include a "training" period. Accordingly, please discuss how much confidence one should have in the projected impacts listed in this document, especially at the regional level. ▪ There should also be a discussion of whether and why using model ensembles is a robust approach to estimating climate change that goes beyond the finding that ensemble results on average correspond better to observations. This could be due to cancellation of errors within individual models. ▪ The discussions of the methodologies used to project impacts are woefully inadequate, which detracts from the credibility of this report. ▪ The unscientific nature of this report is evident in big things (such as neglecting to inform the reader what magnitude or rate of climate change is assumed for the impacts listed on pp. 8-11, neglecting to provide error bars for estimates of past and future temperature change, neglecting to provide a description of the methodologies employed to estimate impacts, speculating on tipping points rather than discussing their likelihoods as a function of time, etc.) to small things. In the latter category, I include departure from standard scientific practice specifying temperature change in °F rather than °C (which is standard under the International System of Units, SI, commonly | <p>Agreed. The sources of the figures are included in the revised version of the report.</p> <p>The revised report has a description of the models used and their limitations.</p> <p>Agreed. This is now included in the description of the models used.</p> <p>The report is now more heavily referenced so the sources of the statements are more transparent.</p> <p>The language of the report is being revised to be more precisely accurate. However, the report should still be readily accessible to readers in the United States, so the use of degrees F will remain. The likelihood classifications are now in the front of the report.</p> |

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| | | | | | <p>used for scientific purposes), not to mention equating “greater than 66%” to “likely” and “very likely” to “greater than 90%”. [Goklany, Department of the Interior.]</p> <p>4. In the following, I have in some instances provided modifications to existing text. In these instances, inserted language is specified in UPPER CASE, and strikeouts are also indicated.</p> <p>Goklany</p> | Noted. |
| P | Goklany | Gen | | | <p>Many of the figures don’t specify sources that they were taken or derived from (see, e.g., pages 17-19). This is contrary to scientific convention. Please provide the sources and/or methodologies used to generate these figures. If the methodologies used to generate them are too much to include in this document itself, please provide links to websites that contain the requisite information, and can be readily accessed by other researchers and members of the general public who may be interested in verifying and/or reproducing the information conveyed in these diagrams.</p> <p>Goklany</p> | The sources of figures are now documented. |
| P | Goklany | Gen | | | <p>Appendix A submitted by DOI attached to this collation.</p> <p>Goklany</p> | Thank you for your submission. Noted. |
| P | Haapala | Gen | | | <p>In the short time frame allowed for public comment it is impossible to address all the errors in this important document. Only the most grievous errors found in the Executive Summary and the Global Climate Change sections are addressed. Among the worst are: 1) truncating the period of the study which ignores past climate changes and the natural forces that caused them; 2) ascribing to human activities the responsibility of the recent warming even though knowledge of the natural forces causing climate change are not understood; and 3) depending on projections from computer models that are unreliable and biased by over estimating future warming from human emissions of greenhouse gases and underestimating the natural causes of warming. All sections, graphs, summaries, conclusions, findings, etc. of the USP that use projections from the computer models must be dropped or contain statements that that section, graph, summary, conclusion, finding, etc. depends upon computer models that are unreliable and biased.</p> <p>The changes requested above are not all inclusive. More time is needed for adequate public comment and I request an extension of the public comment time period.</p> | <p>The USP synthesizes results of reproducible tests documented in the peer-reviewed literature.</p> <p>There will be another public review to provide you with additional time to make additional comments.</p> |

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| | | | | | <p>If the changes requested above are not made in all relevant sections, the USP fails to meet the requirements of the Information Quality Act. Thus it cannot be permissibly disseminated in final form with the apparent imprimatur of the federal government. As it no stands the USP is misleading and is of no value in establishing rational public policy.</p> <p>Haapala, NIPCC</p> | <p>The USP is complying with all relevant rules and regulations.</p> |
| P | Healy | Gen* | | | <p>The entire draft report should be rejected until the following stipulations have been met.</p> <p>Any scientist cited in works of this nature should have met the basic requirements of fulfilling the scientific method. At the time of publication of any studies or papers, all data and methods should be archived in a format readily accessible and available to any other scientist or interested citizen to review and critique. The failure of many of the authors cited in draft above to fulfill these most basic requirements undermines the validity of the entire document. Gentlemen and ladies you need to make a new start using principles that have been in existence since the time of Francis Bacon.</p> <p>A short list of scientists cited in this report, whose work should be removed from consideration include: Hansen, Mann, Bradley, Hughes, Jones, Wahl, and Ammann. Unfortunately, when you remove the names of the guilty scientists there is very little left upon which to create a report; a very sad commentary on the state of climate science in the U.S.</p> <p>It is time to begin again, this time using the scientific principles we hold so dear and eschewing any hint of political intent. To date you have failed terribly.</p> <p>Healy, Public Citizen</p> | <p>The USP synthesizes the results of reproducible tests documented in the peer-reviewed literature. Please see IPCC WG I section 1.2 for more details on how science progresses.</p> <p>Even a cursory glance at the references cited in this draft of the report, and more references will be cited in the revised version, will reveal that the work by the scientist listed represents a very very small fraction of the total citations.</p> <p>Please see IPCC WG I section 1.2 for a detailed description of the nature of science.</p> |
| P | Heinsola | Gen* | | | <p>Your draft looks good but it should include also the real action suggestions against climate crisis not only adaptation suggestions. Or this kind of report should follow immediately afterwards.</p> <p>Many of us don't need any more proves for that fact that climate crisis is going on and that the main reason for it is the man.</p> <p>I wonder why in USA you don't consider biomethane for the biofuel alternative.</p> | <p>Thank you for your comment. The mandate for the report is the climate change impacts on the U.S. so mitigation, such as increased use of biomethane, while laudable (the landfill of the town the author of this response lives captures methane) is beyond the scope of this report.</p> |

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| | | | | | <p>Biogas production from different biowastes (manure, sewage waters, kitchen waste, food industry waste, etc.) and energy crops have a huge potential and it is the most efficient way to produce clean biofuel and in the same time it gives the possibility to circulate nutrients and reduce the use of chemical fertilizers and the fossil energy used for making and transporting them.</p> <p>I am running with my biogas car which over all CO2 emissions are about 10 g/km. This can go to 0 g/km when the whole production chain is made with the renewable energy. It can even go to the negative side if the CO2 cleaned from the biogas in the upgrading process is captured.</p> <p>Heinsola, University of Jyväskylä (Finland)</p> | |
| P | Herman | Gen | | | <p>After reading through this report, I was quite disappointed at the overly biased results and interpretations of various issues as presented within the report. Many issues which, at present, are still not resolved, have been presented as though the conclusions within the report are without debate, and have been accepted by the community at large. As a result, the Societal Impacts, etc., have been presented as though all of the climatic issues are settled, and all that remains is to decide how to best proceed to minimize the impacts. In the following comments, I will point out a few of the issues with which I am most familiar. I am confident that others will comment on the numerous other points of importance.</p> <p>Herman, University of Arizona</p> | <p>Thank you. The USP synthesizes the results of reproducible tests documented in the peer-reviewed literature. The revised version of the report will have more careful use of likelihood statements where matters are uncertain.</p> |
| P | Herman | Gen | | | <p>In going over this report, I have found numerous other issues which are open to question, but I feel as I stated earlier, that others will comment on them. The ones outlined above are a few of the ones that I chose to comment on. I realize that the committee had a tremendous task to complete, one with so much research coming out monthly that it would be very difficult to include it all. However, I also feel that what was included was very biased towards convincing the reader that there is little question but that greenhouse gas effects are the primary cause of the recent warming, and there is little need to consider much else. I think this a dangerous direction to take in view of the many uncertainties that still exist in our overall understanding of the interactions of our atmosphere with radiation, chemistry, oceanic circulations (cause and effect), sources and sinks of these greenhouse gases, solar effects, surface land changes, etc. We also have an incomplete knowledge of many feedback mechanisms, radiational properties and the effects of aerosols are not known accurately, will high level</p> | <p>Thank you. The revised version of the report will better explain climate change and the tests that prove that most of the observed warming in the last few decades is very likely due to human produced greenhouse gases.</p> |

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| | | | | | <p>water vapor increase or decrease with warming, what will the effects of a prolonged decrease in solar activity be (this was also not addressed in the report) as seems possible at this time. I have too many questions that I consider not known, or not understood well enough to draw such rigid conclusions as done in this report.</p> <p>Herman, University of Arizona</p> | |
| P | Hoyt | Gen | | | <p>This Draft CCSP report failed to understand that natural variability is the dominant cause of the recent observed climate changes. The statement is made in the text that:</p> <p>“Human-induced climate change and its impacts are apparent now throughout the United States. Global warming is unequivocal and is due primarily to human-induced emissions of heat-trapping gases and other pollutants”. (page 6)</p> <p>It is essentially repeated on page 20 where it says: “Changes in purely natural factors also influence climate but cannot explain the warming of the past 50 years.”</p> <p>These claims have been proven totally false based upon the paper by Compo,G.P., and P.D. Sardeshmukh, 2008: Oceanic influences on recent continental warming. Climate Dynamics (in press).</p> <p>The abstract of that paper reads: "Evidence is presented that the recent worldwide land warming has occurred largely in response to a worldwide warming of the oceans rather than as a direct response to increasing greenhouse gases (GHGs) over land. Atmospheric model simulations of the last half-century with prescribed observed ocean temperature changes, but without prescribed GHG changes, account for most of the land warming. The oceanic influence has occurred through hydrodynamic-radiative teleconnections, primarily by moistening and warming the air over land and increasing the downward longwave radiation at the surface. The oceans may themselves have warmed from a combination of natural and anthropogenic influences."</p> <p>Note that Compo is using climate models as a diagnostic tool and not as a predictive tool.</p> | <p>Thank you. The report failed to reflect that because it is contrary to what the peer-reviewed literature indicates.</p> <p>These statements have not been proven false. Compo and Sardeshmukh (2008) indicate that observed warming in the ocean can produce warming on the land but not that the observed warming of the ocean is due to natural causes. The farthest they go about natural causes of ocean warming is to say “a role for natural causes of at least some of the recent oceanic warming should not be ruled out”. If human induced warming warms the oceans which then warms the land, then human induced warming is warming the land and the statement is accurate as it stands.</p> |

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| | | | | | | <p>Additional comments:</p> <ol style="list-style-type: none"> 1. The Compo paper states: "Indeed we find compelling evidence from several atmospheric general circulation model simulations without prescribed GHG, aerosol, and solar forcing variations (Table 1) that the continental warming in Fig. 1a is largely a response to the warming of the oceans rather than directly due to GHG increases over the continents (Table 2)." In other words, they simulate the observed climate changes without any changes in greenhouse gases and that entirely negates the major claim of the CCSP report and all that is deduced from that unsubstantiated claim. 2. The cloud cover variations reported by Palle are consistent with the recent cooling of the oceans based upon the Argo buoys and are inconsistent with the GHG warming theory. 3. The oceans cannot be warmed by additional downward radiation from additional greenhouse gases since this radiation is absorbed in the upper few microns of the oceans. Indeed Compo says the heat is flowing out of the oceans and not into it, so this also eliminates the false hypothesis (Hansen, 1985) that greenhouses gases warm the air which is then mixed into the oceans warming them. 4. Cloud cover over the oceans varies and this modulates the amount of solar radiation reaching the surface which modulates the ocean temperatures. Cloud cover variations are probably natural unforced internal variations of the climate system. It is unlikely that cloud cover and ocean temperatures are ever in equilibrium and hence one can expect oscillations over decades and centuries as seen by El Nino, PDO, AMO, NAO, the 1500 year cycle, etc. 5. Palle reports that the internal forcing is several watts per square meter. The observed temperature variations are in the tenths of a degree. The implied climate sensitivity therefore is very low. The low climate sensitivity means that the postulated forcing by greenhouse gases will have little effect of temperatures. 6. The IPCC (2007) theoretical climate sensitivity of 0.75 K/(W m-2) is much too large. Recent empirical estimates of climate sensitivity are: 0.29 to 0.48 ± 0.12 K/(W m-2) (Chylek et al., 2007); 0.49 ± 0.07 K/(W m-2) (Chylek and Lohmann, 2008); 0.32 K/(W m-2) (Schwartz, 2007); about 0.10 K/(W m-2) (implied from Palle et al.'s paper, 2005); and 0.15 K/(W m-2) (Spencer, 2008). The Spencer estimate is probably the closest to the truth since it is the only one that attempts to remove unforced internal climate variations. This is most important: the science is not settled and there is an ample scientific evidence for that. 7. The IPCC contends that climate feedbacks are positive and that is why they claim | <p>See note above.</p> <p>A recent paper documenting the cooling of the ocean as seen by Argo floats has been acknowledged to be in error due to problems merging the new data.</p> <p>Ocean mixing allows the ocean to be warmed or cooled from surface fluxes.</p> <p>Cloud cover changes have been proven to have both natural and anthropogenic components.</p> <p>The preponderance of the peer-reviewed literature on the subject indicates that climate sensitivity is high enough for changes in greenhouse gases to effect temperatures in meaningful amounts.</p> <p>The USP does not provide an estimate of climate sensitivity.</p> <p>There is a tremendous amount of literature on climate models and climate feedbacks. Warming causes melting of snow which decreases the sunlight reflected back to space thereby serving as a positive feedback. As the IPCC states, "New observational and modeling evidence strongly favours a combined water vapour-lapse rate feedback of around the strength found in General Circulation</p> |

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| | | | | | <p>a high climate sensitivity. Unfortunately for the modelers, the climate feedbacks are negative as demonstrated by Karner (2002) and more recently confirmed by Spencer (2008) using the Aqua satellite. Thus, the climate models are fundamentally flawed.</p> <p>8. Koutsoyiannis et al. (2008) has recently found that climate models have no predictive value and yet the whole CCSP report assumes models have predictive value.</p> <p>Thus, the recent scientific evidence does not support the IPCC perspective on climate change and there is little or no evidence that climate change is dominated by the emissions into the atmosphere of greenhouse gases, particularly carbon dioxide.</p> <p>For convenience, an abstract of one of Palle et al.’s papers is reproduced below: Pallé E., P. Montañés-Rodríguez, P. R. Goode, S. E. Koonin, M. Wild, and S. Casadio, 2005: A multi-data comparison of shortwave climate forcing changes, Geophysical Research Letters.</p> <p>The abstract reads: "Traditionally the Earth's reflectance has been assumed to be roughly constant, but large decadal variability, not reproduced by current climate models, has been reported lately from a variety of sources. We compare here the available data sets related to Earth's reflectance, in order to assess the observational constraints on the models. We find a consistent picture among all data sets of an albedo decreased during 1985–2000 between 2–3 and 6–7 W/m², which is highly climatically significant. The largest discrepancy among the data sets occurs during 2000–2004, when some present an increasing reflectance trend, while CERES observations show a steady decrease of about 2 W/m²."</p> <p>To summarize, the combined work of Palle and Compo is consistent with the following:</p> <ol style="list-style-type: none"> 1. Cloud cover is varying over the oceans (Palle et al., 2005). 2. The cloud cover causes changes in ocean temperatures by modulating the amount of solar radiation being absorbed. 3. Oceans temperatures will modulate cloud cover so the two systems modulate each other giving rise to long-term natural oscillations in climate such as the PDO, | <p>Models (GCMs), that is, approximately 1 W m⁻² per degree global temperature increase, corresponding to about a 50% amplification of global mean warming."</p> <p>Koutsoyiannis et al. (2008) showed that individual model runs were not appropriate for providing station level point data. This has been known for some time which is one of the reasons why downscaled multi-model results were used in the USP.</p> <p>There is a tremendous amount of evidence in the peer-reviewed literature that greenhouse gas emissions currently dominate climate change.</p> <p>This paper was had a reply by Bender in 2006 that stated "Given the differences between the data sets and their different inherent weaknesses, the conclusion of Pallé et al. [2005] that "There is a consistent picture among all data sets by which the Earth's albedo has decreased over the 1985–2000 interval." is not properly founded. A statement of this kind should be based on data sets that measure the same quantity, and must be accompanied by appropriate error estimates."</p> <ol style="list-style-type: none"> 1. Cloud cover does vary. 2. As do aerosols and greenhouse gases. 3. These oscillations are far more complex than simple cloud cover – ocean temperature interactions. |

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| | | | | | <p>NAO, and AO.</p> <p>4. The changes in ocean temperatures cause much of the observed changes in temperature over land (Compo et al., 2008).</p> <p>5. Part of the changes in reported land temperatures are also caused by land use changes (e.g., Pielke, Sr.), urban heat islands (e.g., McKittrick and Michaels), and poor siting of thermometers (e.g., Watts).</p> <p>Hoyt, NCAR (retired)</p> | <p>4. But ocean temperatures are impacted by aerosols and greenhouse gases.</p> <p>5. But there is a huge body of literature on the reliability of surface temperature observations including a very good paper released this year by Phil Jones.</p> |
| P | Hoyt | Gen | | | <p>The comments above are just an example of the exclusion of peer reviewed studies in the draft CCSP report.</p> <p>The executive summary is a highly political diatribe that has no place in the report. In fact, the whole report is a glossy promotional brochure designed to promote the Kyoto Protocol and it is far, far away from being an unbiased scientific assessment.</p> <p>The report is co-chaired by scientists (Tom Karl, Jerry Melillo, and Tom Peterson) who have a conflict of interest in the assessment as they are evaluating significant portions of their own research. Authors of the report should come from outside the climate science and climate advocacy communities.</p> <p>I recommend that the Draft CCSP Synthesis Report be rejected in its entirety. The draft report is just plain silly and the silliness exists on every page of the report.</p> <p>A new independent assessment Committee should be appointed in order to present policymakers with an accurate assessment of the diversity of viewpoints on the climate system. This includes more emphasis on natural climate variations, data quality limitations, and erroneous and omitted physics in the climate models. A new report should then be written.</p> <p>If a scientist has a theory, he looks diligently for facts that might contradict his theory so that he can test its validity or refine it. The propagandist on the other hand selects only those facts that agree with his theory and dutifully ignores those facts that contradict it. The CCSP Report is clearly propaganda.</p> <p>Hoyt, NCAR (retired)</p> | <p>Many of the papers cited above are not peer-reviewed. For example, Watts work on poor citing cited above has made no peer-reviewed analysis of the impact of poor citing on temperature while Peterson and other non-cited work has shown that homogeneity adjustments account for poor station citing.</p> <p>The Executive Summary has undergone major revision.</p> <p>It does not make sense to have the report written by people who are not working in the field and therefore don't know what the issues are.</p> <p>Thank you for your comment.</p> <p>A new report that is based on the entirety of the peer-reviewed literature, especially including the CCSP SAPs and IPCC would reach approximately the same conclusions as the revised version of this report does.</p> <p>That is indeed what scientists do, as clearly stated in Chapter 1 of IPCC WG I. It is the results of the tests that matter. The USP synthesizes the results of reproducible testing published in the peer-reviewed literature.</p> |
| P | ITT Corp | Gen | | | <p>To continue to make significant progress in understanding climate change and prepare effective mitigation and adaption strategies, a fundamental task for the</p> | <p>Agreed. Thank you for your comment.</p> |

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| | | | | | | <p>community is to increase the quantity and quality of environmental data.</p> <p>Data is crucial to understand the past, present and future, and is absolutely necessary to improve our modeling capability, which in turn will provide the information needed by decision makers at all levels.</p> <p>The community at a minimum must accurately quantify and monitor:</p> <ul style="list-style-type: none"> • The state of the environment now (global atmosphere temperature profiles and SST) • The energy inputs into the system (solar radiometer and global cloud cover) • Trace gas monitoring • The global carbon cycle <p>In addition, any carbon capping or regulatory scheme will only succeed if it can accurately measure and monitor Green House Gases, especially, CO₂.</p> <p>The key to accurate climate data measurement requires several preconditions, whether those measurements come from space, air, land or sea:</p> <ul style="list-style-type: none"> • The stability of the instruments over lengthy periods of time • Verification and calibration • Operational overlap, especially for space-based assets <p>We have some concerns about the ability of the government to transition research measurements and platforms to operational use. There are several long-term measurements at risk now. We must have a comprehensive plan for how to ensure the long-term viability of these measurements, and a plan for the resources necessary to fund all important measurements.</p> <p>We believe the “Decadal” report by the National Research Council provides a tremendous roadmap for the government to follow. Our ability to conduct these missions and transition them to operational use will be one of the basis for success in our ability to effectively deal with climate change.</p> | <p>Agreed. Thank you for your comment.</p> <p>Agreed. Thank you for your comment.</p> <p>Carbon capping and regulatory schemes are beyond the domain of the USP.</p> <p>Agreed. Thank you for your comment.</p> <p>Agreed. Thank you for your comment.</p> <p>Thank you for your comment.</p> |

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| | | | | | In addition, we believe it is crucial for data for be open and free and for the community to have access to calibration records, raw data streams and open source algorithms. ITT Corporation | Agreed. Thank you for your comment. |
| P | Jaworowski | Gen | | | <p>A striking feature of the Report is a unilateral presentation of information, with an almost exclusive concentration on greenhouse gases, and particularly on the man-made emissions of carbon dioxide, as the dominant cause of the Modern Warm Period. The Report totally ignores studies which disagree with the man-made warming hypothesis.</p> <p>An example of this neglect, one from among many, is a lack of information on cosmo-climatologic research. Recent studies demonstrate a powerful influence on climate of fluctuations of the muon fraction of cosmic rays, caused by variations of Sun’s activity. In the lower troposphere muons create condensation nuclei for water particles, indispensable for cloud formation. Cloudiness, which is directly related to the flux of muons, determines temperature at the surface of the Earth and in the lower troposphere. Short-term fluctuations of muon flux change the cloudiness by 3 – 4% (Svensmark and Calder, 2008). In the Report this is not discussed at all. But the relationship between climate and cosmic ray fluctuation, on the time scales from decades to centuries to millennia, is much stronger than between climate and human emissions of CO2. (Svensmark, 2007; Svensmark and Calder, 2008). Only a 2% increase in cloudiness is sufficient to cancel any climatic effect of man-made emissions of CO2 (Veizer, 2005). The activity of Sun, which was stronger during the last 60 years than for the past 1100 years (Usoskin and al., 2004; Usoskin et al., 2003), is a much more plausible cause of the Modern Warm Period than human emission of CO2. Extremely strong correlation between temperature (estimated from delta 18O in stalagmites) and radioactive carbon-14 (produced by cosmic rays in the atmosphere) indicate that the influence of Sun (modulating the cosmic ray flux) on the Earth’s temperature was about 280 times stronger than the influence of atmospheric CO2 (Mangini et al., 2005). These fundamental studies are ignored in the CCSP-USP Report, making its claim that CO2 man-made emissions are the main cause of the Modern Warming Period unsupportable.</p> <p>The phrase “climate change is now upon us”, repeated in various versions in pages 1 to 9, and then throughout the document, is incorrect and misleading. It tacidly</p> | <p>The report synthesizes the entirety of the peer-reviewed literature, as does the IPCC. Both, therefore, emphasize the important role of greenhouse gases in climate change.</p> <p>Cloudiness is not directly related to the flux of muons. Muons may, indeed, serve as ccn but so do a tremendous amount of anthropogenic and natural air bourn substances. So the link between cosmic rays and cloud properties is tenuous. Then comes the additional link between the potential alteration of cloud properties and the temperature at the surface of the earth. Meanwhile, CO2’s radiative effect has been repeatedly verified in laboratory settings.</p> |

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| | | | | | | <p>implies that the climate was formerly “stable”, and it is only now that it changes. This, however, is not true, and is not in agreement with other statements in the document. Without human intervention and without influence of CO₂, climate was changing constantly over the past several billion years, sometimes much more and much faster than now (Veizer, 2005). The Dansgaard-Oeschger events (D-Os), extremely rapid changes of climate, occurred about 20 times during the past 100,000 years. One of them, the so called “Younger Dryas”, happened 12,800 years ago, when the warm climate switched rapidly to a cold one, and then after 1300 years, almost immediately returned back into warm phase. Both times the switching took one decade or just few years, i.e. much less than the recovery from the Little Ice Age after 1900 AD, which “is now upon us“. The current Modern Warm Period is one of innumerable former natural warm climatic phases; it is less warm than four such former phases, which the planet have seen over the past 1500 years (Grudd, 2008). This information is ignored in the Report, and the influence of man-made CO₂ is utterly exaggerated. The key requirement of objectivity does not hold in this Report, not only in presenting the facts, but also in its style.</p> <p>Figure in page 19 suggests that there is a relationship between trends in atmospheric CO₂ concentration, man-made CO₂ emissions, and temperature. The only true data in this figure are the carbon emissions. The temperature and CO₂ concentration curves are false. The temperature curve is the infamous “hockey curve” of (Mann et al., 1999), used as a flagship in Working Group I: The Scientific Basis, Chapter 2 (IPCC, 2001). In this curve both the Medieval Warming, and the Little Ice Age disappeared altogether, although hundreds of peer reviewed publications by more than 560 authors from more than 300 institutions in about 40 countries demonstrated that both these warm and cold climatic phases had a global range (Broecker, 2001; CO₂science, 2008; Cole-Dai and Zhou, 2003; deMenocal et al., 2000; Hall, 2007; Kreutz et al., 1997; Loehle, 2007; Loehle and McCulloch, 2008; Mosley-Thompson and Thompson, 1992; Tyson et al., 2000). A crushing criticism by several groups of authors ((Legates, 2003; McIntyre and McKittrick, 2003; Muller, 2003; Soon, 2003; Soon and Baliunas, 2003; Soon et al., 2003) demonstrated that the temperature “hockey curve” represented the wishful thinking, and flawed and probably fraudulent methods, rather than the climatic reality. After this criticism, the curve disappeared in the 2008 IPCC report. Its reappearance in the CCSP-USP Draft</p> | <p>Climate changes on many time scales. In terms of temperature, the rate of climate change currently experienced is much greater than the paleo data indicate globally or hemispherically over the last thousand years. That does not mean that change wasn’t more rapid during the Younger Dryas or some other time in the history of the earth. But global climate change is indeed occurring at rates unseen for a very long time and the warming rates are projected to increase in the future.</p> <p>The figure on page 19 discussed in this comment has been preplaced by a new figure based on a peer-reviewed study released mid 2008.</p> |

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| | | | | | | <p>Report, and a complete ignoring in this Report of the existence of the Holocene Warming, Medieval Warming, and Little Ice Age, disqualifies it as an objective source of scientific information.</p> <p>The CO2 atmospheric concentration curves in pages 17 and 19 have also the shape of a “hockey club”. They are the very foundations of the man-made greenhouse warming hypothesis. Figure in page 17 suggests that during the past 800 000 years the atmospheric concentration of CO2 was always 170 - 300 parts per million (ppm), and never before 20th century reached the level of about 380 ppm. Figure in page 19 suggests that between 1000 and ~1800 AD the CO2 concentration in the atmosphere was about 180 ppm, and in the second half of the 19th century it started to increase rapidly, up to the current level, allegedly some 30% higher than before the industrial revolution. Both these CO2 curves are false.</p> <p>The CO2 “hockey curves” are made from proxy estimates of CO2 atmospheric levels, based on analysis of air bubbles from the Antarctic and Greenland cores of old ice, combined with direct measurements of this gas in samples of modern atmospheric air, collected near the summit of an active, CO2 emitting Mauna Loa volcano at Hawaii. There are two problems with these curves.</p> <p>The first problem with CO2 “hockey curves” in pages 17 and 19 is the unreliability of proxy CO2 determinations in old polar ice.</p> <p>Ice cores do not fulfill the essential closed-system criteria, indispensable for reliable reconstruction of the pre-industrial and ancient atmosphere. One of them is a lack of liquid water in ice. This criterion is not met, as there is an ample evidence that even the coldest Antarctic ice contains liquid water, in which solubility of CO2 is about 73 times, and 26 times higher than that of N2 and O2, respectively. This dramatically changes the chemical composition of the gas inclusions in polar ice in comparison to atmospheric air. More than 20 physical and chemical processes, mostly related to the presence of liquid water, contribute to CO2 depletion from the original air inclusions (see review in (Jaworowski et al., 1992). One of these processes is formation of clathrates, solid crystals formed at high pressure and low temperature by interaction of gas with water molecules. In the ice sheets, CO2, O2, and N2 start to form clathrates at about 5 bars, 75</p> | <p>The CO2 curves are based on peer-reviewed data.</p> <p>The long-term CO2 curves are from ice cores and instrumental mountain top observations in the middle of the Pacific Ocean.</p> <p>The USP must build its synthesis from the entirety of the peer-reviewed literature. This reviewer argues that the long-term ice core data are unreliable and has done so in the peer-reviewed literature. But there is a tremendous amount of peer-reviewed literature that points to the data’s reliability. For example, there are very similar CO2 changes during the last couple glacial-interglacial transition even though the last transition was located in a type of ice that apparently should be less reliable according to Dr. Jaworoski’s hypothesis.</p> |

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| | | | | | | <p>bars, and 100 bars, respectively. Due to this process, CO2 starts to leave air bubbles at a depth of about 200 meters, and the air bubbles themselves disappear completely at a depth of about 1000 meters.</p> <p>Drilling, which is an extremely brutal procedure, decompresses the deep ice cores, in which the solid clathrates decompose now into gas form, exploding in the process as if they were microscopic grenades. In the decompressed bubble-free ice the explosions form new gas cavities and mini-cracks. The ice cores, however, are earlier exposed to a more coarse cracking by vibration in drilling barrel, and by the sheeting phenomenon at the bottom of the borehole, induced by pressure difference between the drilling fluid and the ice. Before the cracks heal by regelation, they open the gate for the escape of gas inclusions, and for an extreme pollution of the ice cores with heavy metals from drilling fluid. Pollution of the inner parts of ice cores with lead and zinc, which is thousands of times higher than their levels in the surface snow (Boutron et al., 1990; Boutron et al., 1987), clearly shows that these cores are not a close system.</p> <p>Glaciological CO2 records are thus strongly influenced by natural processes in the ice sheets and man-made artifacts in the ice cores, which lead to depletion of CO2 by 30% to 50%. In addition, the records presented in figures in pages 17 and 19, are beset with arbitrary selection of data, with experimentally unfounded assumptions on gas age, and one-sided interpretations ascribing the observed concentration trends to human factors, ignoring other more plausible explanations (Jaworowski, 1994).</p> <p>It was never experimentally demonstrated that ice core studies reliably reconstruct the original composition of the past atmosphere. Perusal of these studies indicate that polar ice and the ice cores are an improper medium for this task, and that glaciological studies are not able to its fulfillment (Jaworowski, 1994; Jaworowski et al., 1990; Jaworowski et al., 1992).</p> <p>The assumption on a low and stable level of CO2 in the pre-industrial atmosphere, and on its recent increase of about 30% due to the fossil-fuel burning (IPCC, 2007), was posed by (Callendar, 1958) and (From and Keeling, 1986), after arbitrary rejection of most of the >90,000 technically excellent, direct measurements of CO2 in the atmosphere, carried out in America, Asia and</p> | <p>See comment above.</p> <p>See comment above.</p> <p>See comment above.</p> <p>There is a reason why Keeling went to the top of a mountain in Hawaii to measure CO2. And even there, local effects must at times be removed from the data. Earlier observations were not reliable primarily because of local effects. Furthermore, the current state of carbon cycle science indicates that the changes Beck documented</p> |


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| | | | | | | <p>Europe, during 149 years between 1812 and 1961. These measurements showed that the 5-year average CO2 concentrations fluctuated widely, with a minimum of 290 ppmv in 1885, and peaking up to 440 ppmv around 1820, to about 390 ppmv around 1855, and to about 440 ppmv around 1940 (Beck, 2007), a pattern completely different from a flat and low ice-core record.</p> <p>(Figure: Co2-1812-2004 Northern Hemisphere, Chemical Measurement inserted – in digital file)</p> <p>Reconstruction of CO2 concentration trends in the Northern Hemisphere based on more than 90,000 direct chemical measurements in the surface atmosphere at 43 stations between 1812 and 1961. The lower line are the proxy estimates from Antarctic ice core artifacts. The diamonds on the lower line (after 1958) are infrared direct CO2 measurements in air samples taken at an active volcano Mauna Loa, Hawaii. Adapted after (Beck, 2007) .</p> <p>This ice core proxy estimates disagree also with other proxy CO2 determinations for the past 10,000 years, which fluctuated up to 459 ppmv (Kurschner et al., 1996; Royer et al., 2001; Wagner et al., 1999; Wagner et al., 2002). The low CO2 ice-core concentrations during the six former interglacials, when the global temperature was warmer than now, suggest that either atmospheric CO2 levels have no discernible influence on climate, or that the proxy ice core reconstructions of the chemical composition of the ancient atmosphere are false – both propositions are probably true.</p> <p>(Note: Figure inserted – in digital file)</p> <p>Atmospheric CO2 concentrations between 6800 and 8700 B.P. based on stomata of fossil birch leaves from Denmark (right line), and on ice core from Taylor Dome, Antarctica (left line). After Wagner et al. 2002).</p> <p>Uncritical acceptance in CCSP-USP Report of the low CO2 ice core records from old polar ice as the only basis for estimation of the pre-industrial levels of atmospheric CO2, ignoring of the high direct CO2 measurements in 19th and 20th century atmosphere and of the high proxy measurements in leaf stomata, demonstrates a lack of impartiality of this Report.</p> <p>The second problem with CO2 “hockey curves” in pages 17 and 19 is doctoring the proxy ice core data from 19th century and earlier (most of which are artifacts), so that they could overlay the direct CO2 measurements in the atmosphere</p> | <p>based on early data are physically unrealistic.</p> <p>The CO2 concentrations presented in the USP agree with the latest peer-reviewed research as well as the IPCC and CCSP SAPs.</p> <p>See note above.</p> <p>This figure has been replaced with the latest peer-reviewed findings.</p> |

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| | | | | | <p>carried out in the second half of the 20th century.</p> <p>The data from 19th century and earlier ice cores, such as those from Siple, Antarctica (Friedli et al., 1986; Neftel et al., 1985), are regarded both in CCSP-USP Report, and in all IPCC reports including the Summary for Policy Makers, 2007 (IPCC, 2007), as a strongest proof that man increased CO2 content in the global atmosphere. However, these data show a clear inverse correlation between the decreasing CO2 concentrations, and the load-pressure increasing with depth (figure A below). This correlation indicates a depletion of CO2 from the air inclusions in ice, caused by formation of crystalline CO2 clathrates, rather than changes in the original atmospheric concentration of this gas.</p> <p>The problem with Siple data (they are included in curves in pages 17 and 19) is that the CO2 concentration found in this locality in pre-industrial ice from a depth of 68 meters (i.e. above the depth of clathrate formation) was “too high” to fit the man-made warming hypothesis. In this ice deposited in 1890 AD, and the CO2 concentration was 328 ppmv, not about 290 ppmv, as needed by the hypothesis. The CO2 atmospheric concentration of about 328 ppmv was measured at Mauna Loa, Hawaii in 1973 (Boden et al., 1990), i.e. 83 years after the ice was deposited at Siple. Instead of rejecting the assumption on low pre-industrial concentration of CO2 in the atmosphere, the glaciologists found a “solution”.</p> <p>An ad hoc assumption, not supported by any factual evidence solved the problem: the average age of air was arbitrary decreed to be exactly 83 years younger than the ice in which it was trapped (Jaworowski, 1994; Jaworowski et al., 1992). The “corrected” ice data were made to smoothly overlay the recent Mauna Loa record (figure B below), and then were reproduced in countless publications as a famous “Siple curve”. Eight years after first publication of the Siple curve, glaciologists attempted in 1993 to prove experimentally the “age assumption” (Schwander et al., 1993), but they failed (Jaworowski, 1994). Similar manipulation of data was applied also to ice cores from other polar sites, to make the “CO2 hockey curves” covering the past 1000 and even 400,000 years (IPCC, 2001; Wolff, 2003). For some of these curves much longer air/ice age difference was arbitrary assumed, without any experimental support, reaching up to 5,500 years. The apparent aim of these manipulations, and of ignoring other proxy CO2 determinations and of ~90,000 direct determinations in the pre-industrial</p> | <p>See earlier responses to comments on the fidelity of ice core data.</p> <p>See earlier responses to comments on the fidelity of ice core data.</p> <p>See earlier responses to comments on the fidelity of ice core data.</p> |

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| | | | | | | <p>and 20th century atmosphere, was to induce in the public a false conviction that the 20th century level of CO2 was unprecedented over the past hundreds thousand years.</p> <p>So manipulated data were used as an “indicator of human influence on the atmosphere during the Industrial Era” (IPCC, 2001). They are also used as “human influences” and “fingerprint” in the text in page 26 of the Report, and in the figure therein on “Separating Human and Natural Influences on Climate”, to argue that the “observed (current) warming could not have been caused by natural forces alone”. In fact this is the only proof of human causation of the Modern Warm Period presented in the Report. This proof is false.</p> <p>(Note: Figure inserted – in digital file)</p> <p>Mother of all CO2 hockey curves. CO2 concentration in air bubbles from pre-industrial ice from Siple, Antarctica (open squares), and from 1958 – 1986 atmosphere at Mauna Loa, Hawaii (solid line). In A, the original Siple data are given without assuming the 83-year-younger age of air than the age of the enclosing ice (Jaworowski, 1994). In B, the same data are shown after an arbitrary “correction” of the age of air as published by Neftel et al., 1985 and Friedli et al., 1986.</p> <p>SUMMARY</p> <p>The foundations of the CCSP-USP Report, its “fingerprints” and “human influences”, are based on ice core studies of CO2. However, ice cores are a wrong matrix for reconstruction of chemical composition of the ancient atmosphere. No effort dedicated to improving analytical techniques can change the imperative pattern of polar ice as a no-closed system matrix. Because of this pattern of ice the CO2 ice core data will always be artifacts caused by processes in the ice sheets and in the ice cores, with CO2 concentration values about 30% to 50% lower than in the original atmosphere.</p> <p>The low CO2 ice-core concentrations during the past interglacials, when the global temperature was warmer than now, suggest that either atmospheric CO2 levels have no discernible influence on climate, or that proxy ice core reconstructions of the chemical composition of the ancient atmosphere are false – both propositions are probably true.</p> | <p>See earlier responses to comments on the fidelity of ice core data.</p> <p>See earlier responses to comments on the fidelity of ice core data.</p> <p>See earlier responses to comments on the fidelity of ice core data.</p> <p>Or that the ocean-atmosphere system has not reached equilibrium yet in response to the recent addition of greenhouse gases or that the cooling effect of anthropogenic aerosols have also influenced temperature – both propositions are probably true.</p> <p>See earlier responses to comments on the fidelity of ice core data.</p> |

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| | | | | | <p>The scenarios in the CCSP-USP draft Report, are based on unreliable ice core data and on incorrect presentation of the past climatic changes. They should not be used for global economic planning. Under Information Quality Act’s terms this document is not permissibly disseminated so long as it continues to reproduce these false scenarios with the apparent imprimatur of the federal government. The requested change is: (1) to drop all the references to “human influences” and “fingerprints” as they cannot be credibly validated and are in fact empty notions; (2) to present the veritable fluctuation of climatic cold and warm phases over the past millennium; (3) to review the recent cosmo-climatologic studies, and to reflect them in the conclusions and recommendations of the Report. Without such corrections, the statements in this document fail to meet the authors’ claim of representing “the best available information” (p. 14), and “the best available evidence” (p. 15), and otherwise violate applicable objectivity requirements.</p> <p>(Note: References inserted – in digital file) Jaworowski, Central Laboratory for Radiological Protection, Poland</p> | <p>The USP is complying with all relevant rules and regulations. The suggested changes are not supported by the overwhelming majority of the peer-reviewed literature including CCSP SAPs and the IPCC.</p> |
| P | Johnson | Gen* | | | <p>Without enforceable limits on China and India, any and every change that is made by the United State will be ineffective and damaging to our economy. Johnson, Public Citizen</p> | <p>The USP does not address policy decisions with respect to any potential US or international mitigation endeavors.</p> |
| P | Khandekar | Gen* | | | <p>BIAS TOWARDS NEGATIVE EFFECTS WHILE IGNORING BENEFITS OF SLIGHT WARMING AND INCREASED CO2</p> <p>This comment relates to the fact that most all references to benefits in the CCSP were to be the result of proposed mitigation or adaption or alternative energy solutions. The only global warming benefits discussed were from decreasing extreme cold (pages 8 and 78) and a longer growing season in Alaska (page 144). There was a mention of undefined short term benefits of warming (on page 4).</p> <p>THE BENEFITS OF GLOBAL WARMING (GW) MUST BE ARTICULATED</p> <p>1. GW benefits specifically to humans: more livable winter season, especially for high-latitude countries (Canada , Russia , Siberia) especially for seniors in terms of less stress due to extreme cold, more mobility outside of enclosed</p> | <p>CCSP 3.3 clearly states that since society and ecology have adapted to the historic climate, changes in climate away from what the systems were adapted to will tend to disproportionately have negative impacts.</p> <p>Positive impacts are discussed where ever possible.</p> <p>Decreases in home heating costs were shown on page 65. Safety benefits of less snow on roads was described on page 78.</p> |

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| | | | | | | <p>homes and buildings, this providing direct health benefits. Economic benefits: less house/building heating costs, less hazardous transportation (snow covered roads, icy roads etc) and also less cost of transportation, compared to extreme hot climate driving and transportation. This is why so many seniors travel to warmer climes in the coldest months.</p> <p>2. Human health in general: extreme cold climate is definitely more hazardous to human health than extreme hot climate; relatively greater health problems for people living in extreme cold climates versus those living in extreme hot climates (I can use my personal experience here, having lived in extreme cold climate of Edmonton Alberta for 4 years temp -25 to -45C sometimes for weeks, versus extreme hot climate of Qatar Arabian Gulf, temp +30 to +45C for four to five months of the year, where I spent over 2 years as a United Nations Expert). Besides my personal experience, health statistics will amply demonstrate fewer health problems in hot developed countries of Middle East versus those in Siberia and extreme north Canadian and European subarctic regions. The claim that warming increases morbidity rates is a myth. This isn't the case, according to Dr. Robert Mendelsohn, an environmental economist from Yale University . Mendelsohn argues that heat-stress deaths are caused by temperature variability and not warming. Those deaths grow in number not as climates warm but as the variability in climate increases.</p> <p>Indur Glokany in<http://www.csecc.info/reports/report_23.pdf> Death and Death Rates Due to Extreme Weather Events, in 2007 showed deaths from all extremes for 1979-2002. It showed death from extreme cold continues to exceed death from extreme heat.</p> <p>Furthermore he has shown globally death and death rates due to extreme weather have declined in the last century (referenced sources listed in the <http://www.csecc.info/reports/report_23.pdf>document).</p> <p>GW benefits on agriculture, forestry etc are well documented. On forestry and especially on tropical forests I provide two references here A. Lewis et al " Fingerprinting the impact on global change on tropical forests" & Phillips et al 2004 „Patterns & processes in Amazon tree turnover 1976-2001%, both these references from 'Proc Royal Soc London series B V 359 2004 pp.381-462. Benefits to agriculture and grain yields; I think these benefits are well documented as well, improved grain & food (fruits, vegetables etc) growing in a warmer climate vs in colder climates (warmer climate benefits stem from two factors, a slightly warmer mean temp does NOT harm grain yields as long as</p> | <p>The nature of the health problems between extreme cold and extreme heat are quite different and not necessarily related to the actual temperature. For example, the high temperatures that cause deaths in a northern city may cause no problem in a Southwestern city. But heat deaths are directly related to climatic factors. Heat waves have resulted in deaths of hundreds of people. Whereas cold waves do not. Cold deaths tend to be more related to behavioral factors than climatic events. The USP does not report on personal antidotal evidence but rather results of peer-reviewed research.</p> <p>See response above.</p> <p>There are many adaptation measures to extreme weather that can and do decrease deaths. An example was given on the top of page 55.</p> <p>This report focuses on the US, not tropical forests. Extrapolation of analysis in the tropics to the US is not always appropriate. Therefore the USP relied on peer reviewed research that primarily focused on US agriculture and forestry.</p> |

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|  | | | | | | <p>there is enough moisture supply, rains have increased due to a warmer world in general). CO2 is not a pollutant but a plant fertilizer.</p> <p>In fact the average crop, according to <http://ecolu-info.unige.ch/~nccrwp4/GEMINI-E3/Reilly-Interlaken.pdf>Dr. John Reilly et al., of the MIT Joint Program on the Science and Policy of Global Change, is 30 percent higher in a CO2 enhanced world by 2050 where ozone is not an issue. This is not just a matter of opinion, but a well-established phenomenon. The combination of minor rises in temperatures and increased CO2 has benefited plant growth and the more vigorous growth results in modification of the local climate with a positive feedback through the hydrological cycle. Furthermore, CO2 enriched plants are more drought resistant.</p> <p>CORRECTIONS Elaboration of the benefits of global warming and continued carbon dioxide rises must be added to provide balance on this issue. The benefits are more than just short term and not all related to mitigation and adaptation. Further, when carefully evaluated, warmer(hotter) climate has fewer adverse impacts than a cold (very cold) climate. It must be noted that more than 60% of world's humanity lives in a 'hot' climate where mean temperature ranges from +25C to +35C almost year round (with only marginal increase in mean temperature in the last 25 years) and most of these people, living especially in south Asia, have made significant gains in human health and in growing more food (grains & vegetables/fruits etc). (Note: Figures on digital file) Khandekar, Canada</p> | <p>Dr. John Reilly is one of the Blue Ribbon Reviewers of the USP and has provided addition input to the agriculture section. It is well known that increases in CO2 enhances plant growth. But temperature and availability of water impacts growth as well. The USP addresses the totality of climate change's impact on agriculture.</p> <p>The USP has strived to accurately present the positive and negative impacts of climate change on the United States. Recent societal gains in Southeast Asia are not in the domain of the USP.</p> |
| | P | King | Gen* | | | <p>I have never seen such a one sided document in my life. You have included none of the data from the 32,000 climate scientists that signed the Portland Protocol. I am a computer science person with a master's degree. Comments below.</p> <p>Your initial graph of temperature increase temperature increase appears to be the now discredited Hockey Stick. It certainly shows temperatures have never been hotter but they have, many times in our past. Further the temperatures in 2007 and so far in 2008 have dropped to almost wipe out warming that has occurred in over 100 years. King, Public Citizen</p> | <p>The document presents a synopsis of the peer-reviewed literature. No relevant reliable data have been left out of this synthesis.</p> <p>The revised version of the document includes a graph derived from the most recent peer-reviewed analysis.</p> |

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| P | King | Gen* | | | <p>I could review the rest of the document but its apparent you have paid "NO" attention to the 50% of climate scientists that oppose or at least question all these findings. What you are suggesting here is the government rule all aspects of our life in a socialist manner. All this would do nothing except ruin our freedoms with almost negligible effects on the climate. To make such one sided statements such this shows no regard for a very large and growing population of people and scientists that do not buy all this hype.</p> <p>King, Public Citizen</p> | <p>The opinions of scientists were not considered in writing the USP. Rather it is a synthesis of the peer-reviewed literature.</p> <p>The USP avoided making any policy prescriptions.</p> |
| P | Knable | Gen* | | | <p>This is in answer to invitation for public comment at www.climatescience.gov, regarding the written report referred to in Al Gore's July 17,'08 call for independence from oil in ten years (with news note from SacBee)</p> <p>I want to share our family's deep commitment to helping to change this climate problem. Please know that millions more Americans than you will hear from feel the same way, but are too busy and worried by their economic problems to notify you. My husband has taught in the junior college system of California for twenty years and hears daily the concerns of struggling Americans -- people trying to put their lives back together after problems or the young who cannot afford more expensive schooling. People share the same goals, wanting a healthful future for their loved ones and do not share the priorities of the Oil and War Machine or global corporation CEO's.</p> <p>Please continue to state, without flinching, how dire these environmental problems are, because as Al Gore tells us, the solutions to the economy, the environment and world peace will all be furthered by going to solar and wind power -- and doing so only requires "political will." Make sure to include the inefficiencies and dangers of nuclear power, despite that industry's lobbying you. In Sacramento, we decommissioned Rancho Seco Nuclear Power Plant because it was usually closed due to glitches and today we must maintain expensive security watch over this dormant giant. I also cite the two nuclear accidents at Areva Plants in Paris this week.</p> <p>Knable, Sacramento, CA</p> | <p>Thank you for your comment.</p> <p>Thank you for your comment.</p> <p>Thank you for your comment.</p> |
| P | Knappenberger | Gen | | | <p>As you will see from my comments, there is an overwhelming amount of misleading material in the CCSP's "Global Climate Change Impacts in the United States." It is quickly clear that the intent of the report is not to provide a accurate scientific assessment of the current and future impacts of climate change in the United</p> | <p>The intent of the USP is stated in the About this Report section.</p> <p>The opinions of scientists were not part of the assessment. Rather the USP synthesized the totality of the peer-reviewed literature.</p> |

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| | | | | | | <p>States, but to confuse the reader by a loose handling of normal climate events (made seemingly more frequent, intense and damaging simply by our growing population, population movements, and wealth) which are made to seem like climate change events. Additionally, there is absolutely no effort made by the CCSP authors to include any dissenting opinion to their declarative statements, despite the peer-reviewed scientific literature being full of legitimate and applicable reports and observations that provide contrasting findings. Yet, quite brazenly, the CCSP authors claim to provide its readers—“U.S. policymakers and citizens”—with the “best available science.” As I demonstrate over and over in my comments. This proclamation is simple false.</p> <p>While I have made selective comments across several sections of the Report, I have simply run out of time to continue to detail the inaccuracies inherent in the entirety of the document. Please don’t take my lack of comments in some large sections as an indication that I find nothing wrong there. Much of what I detailed in the sections that I did have the opportunity to comment on continue throughout the rest of the report. I have made it clearly obvious that grave and unacceptable errors are appallingly commonplace throughout the pages of the CCSP report that I did review.</p> <p>It is not much of an exaggeration for me to claim that virtually every sentence on every page is contentious—and yet the recognition of any contention or contrasting observations is virtually absent. This occurs too often for it to be accidental, and thus I consider it a blatant and purposeful disregard of legitimate and applicable science. The contention does not simply arise from skeptics being skeptics, but instead, it is plain for all to see in the peer-reviewed scientific literature and in other readily available government datasets. The CCSP authors make no effort to acknowledge any dissenting observations or findings, much less an admission as to the wide depth of the contrasting viewpoints found in the literature.</p> <p>The CCSP report is such a poor handling of the subject of the impacts of climate change on the United States that it cannot be allowed to stand in any semblance of its current form. It should be withdrawn. Any future attempts at producing such an assessment must be done so with authors who will accurately represent</p> | <p>Noted.</p> <p>The USP synthesized the existing peer-reviewed literature with special emphasis on CCSP SAPs.</p> <p>The USP has undergone major revisions and will be released for a second review.</p> |

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| | | | | | <p>the state of scientific knowledge and its limitations. These authors have failed in that effort.</p> <p>Knappenberger, New Hope Environmental Services</p> | |
| P | Kraemer | Gen | | | <p>It's a very nice document with lots of clear color graphics that should impress the public, but it needs to explain the significant drop in worldwide temperatures this past year. Volcanoes aren't it. Although not addressed by your report it looks like it's related to sunspot cycles and long period ocean temperature oscillations. If so, it will be another cold winter coming up....and a period of global cooling.</p> <p>How will you explain this to the public as they struggle to pay their heating bills? Models need to explain reality to have any value. There also appears to be a problem with manipulation of data (Hansen) to try to show exaggerated warming trends (what really was the warmest year in the last century?).</p> <p>In any case, evidence that the warm period of the last few decades was caused primarily by human activity is very weak and disputed by many, perhaps a majority, of Ph.D's (not editorial boards) in the physical sciences. It is far more likely that we have an energy crisis with the planet at "peak oil" production. Alternative energy sources will be developed without wasting vital resources on a politically driven cap and trade carbon system.</p> <p>Kraemer, Virginia State University</p> | <p>2008 year to date (when this reply was being written) global temperature record shows temperatures that are cooler than the last few years but still warmer than any temperature prior to 1998. Clearly this is part of long-term warming.</p> <p>Natural climate variability for the U.S. do not disappear as global temperatures rise. The data are always being improved and results of tests indicate that they are quite reliable.</p> <p>The opinion of people with Ph.D.'s is not part of the USP or the scientific process. Rather it is the results of reproducible tests published in the peer-reviewed literature that matter. These are what the USP synthesized.</p> |
| P | Lavin | Gen* | | | <p>This should be a scientific document. This means that no statement can be made which is not supported by fact, and those facts can be checked and reproduced. Statements which are controversial, or reflect a known bias, must be labeled as speculative and provide both sets of data.</p> <p>This document fails in this purpose.</p> <p>One way of determining if the document is reasonably scientific is to ask whether or not other US government agencies would accept the methodologies, data and claims being made herein. For example imagine that this document was being submitted to FDA to approve a new drug, and the claims for the drug were the executive summary of the climate change draft.</p> <p>Would FDA allow it? Would an FDA advisory panel judge it accurate?</p> <p>The answer is no. The report does not pass the FDA test of what is usual and</p> | <p>The revised version of the USP is much more heavily referenced to make it clearer that the statements in the USP are supported by peer-reviewed research.</p> <p>See response above.</p> <p>Many government agencies have reviewed the document and their comments are available to the public.</p> <p>See note above.</p> |

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| | | | | | | <p>customary for science.</p> <p>For example are the data listings available for inspection? Is the data clean and has it been altered in any way, and are those alterations traceable and is any alteration agreed to identifiable? Is any collected data thrown out? Are the methods used validated according to usual principles? Is the error of the methods reasonable and is the error taken into account when assessing probability? Can the methods be compared to widely acknowledged and accepted standards? Is the probability that the claims are true greater than 95 percent in at least 2 large scale trials? Are baseline comparisons well conceived?</p> <p>The answer to all of this is NO.</p> <p>(Note: After specific comments on the exec summary, he goes on to say) The rest of the report continues to make poorly defined statements which lack credibility. For example the Graphic on page 19 is truly a lollapallooza. I would not allow a graduate student to present "data" like this during journal report.</p> <p>Is this one data set collected the same way with the same instrument and the same methodologies? If not, have the data splices been validated experimentally? Where are the error bars? What is the actual data, not just the change? Is this a 1 percent change or a 20 percent change of the entire number? Is the method of collection and variance of the data the same over the entire time period? Why didn't previous changes in temperature "correlate with co2"? Are there better correlations? Perhaps if you plotted obesity in the USA or use of hydrocarbon fuel in India and China or number of microwave ovens or world wide computer use, or number of batteries produced use it would correlate better with delta T. But you don't say why co2 was selected for a correlation nor defend it. And you don't show alternate correlations with other data sets. And correlation does not prove cause. To suggest otherwise is a scientific fallacy.</p> <p>Furthermore a graph of temperature should be a graph of the entire temperature. Otherwise you are distorting the numbers and magnifying the significance of the "change", just as Madison avenue would do with depictions of product quality or a bad stock broker would.</p> <p>In summary, this is a poorly prepared document which has the flavor of a newspaper</p> | <p>See note above.</p> <p>The revised version of the report is more heavily referenced to provide direct links to the documents describing the data and how they were processed.</p> <p>The graphic on page 19 has been replaced by results from very recently published peer-reviewed findings.</p> <p>See note above. The new figure includes error bars.</p> <p>The Global section clearly states why CO2 is related to temperature.</p> <p>The use of graphs of observations in the revised document has primarily moved to time series showing the entire period of record</p> |

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| | | | | | <p>or magazine marketing program, not a scientific document which will could have devastating life and economic consequences on the world.</p> <p>Lavin, Public Citizen</p> | <p>and the maps showing changes over the last 50 years.</p> <p>The revised version has a different “flavor”.</p> |
| P | Lyssy | Gen* | | | <ol style="list-style-type: none"> 1) please explain how temperature is falling while co2 is rising in the first graph on the opening page 2) what proof do you have that humans are the the cause of climate change when climate change has been occuring throughout earths geologic history 3) is the temperatures in the graph raw data or adjusted? and if adjusted why? 4) is the world historic temperature data set accurate and why? 5) how do you explain recent temperature decreases in global temperature when c02 continues to rise? 6) just exactly what is the basis for the statement irreversible losses? 7) just exactly where are the heavy downpours going to occur and what proof do you have to make such outlandish statements? 8) what proof do you have sea levels are rising due to human induced factors? 9) temperatures are expected to rise based on models, what degree of accuracy have these models shown?...did the models predict the recent fall in global temperatures and how do you reconcile they did not, yet claim they are accurate? 10) how much did this report cost and what is the cost to implement the changes it recommends? 11) when you state climate change, is is going to get warm or cold and just exactly what are we supposed to do solve both cases? <p>this report is a joke...there is no human induce global warming...co2 increases as the result of temperature increases not the other way around, as proved by icecores...co2 is a lifesustaining gas and its concentrations are miniscule as compared to the other greenhouse gases...co2 has a neglible influence in heat trapping...earths geologic history proves climate change is natural, to suggest we humans can effect it is a slap in the face of everything we know about earths history not the least of which that co2 concentrations where an order of magnitude greater than they are today during a devonian period iceage...how do you reconcile that promoting co2 as the driver of earth's temperature?</p> <p>Lyssy, Public Citizen</p> | <ol style="list-style-type: none"> 1) This is described in the Global section as CO2 is not the only driver of climate variability and change. 2) This is described in the Global section. 3) The revised report has clear references to the data that explain their processing and adjustments. 4) Yes historic temperature data set is accurate but a description of how we know that would be distracting from the document 5) See comment for # 1 above. 6) This is described in the Ecosystems section. 7) This is described in the Global section. 8) This is described in the Global section. 9) The reliability of climate models is described in the Global section. Rather than global cooling, data for 2008 year to date global temperatures are greater than any year prior to 1998. 10) This is part of the USP. 11) The figures on pages 34-35 indicate only warming. <p>The reviewers comments are not supported by the peer-reviewed literature which is what the USP is based upon.</p> <p>Answering all the above 11 questions in the USP would distract the reader from the important topics. So no changes were made in the USP in response to these questions.</p> |
| P | Marshall | Gen* | | | <p>This is ridiculous. From the very beginning, the report jumps to the conclusion that “human-induced climate change is affecting us now” [executive summary, pg.</p> | <p>This reviewer’s comment is inconsistent with the overwhelming majority of the results of peer-reviewed literature on the topic.</p> |

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| | | | | | <p>4]. This despite the fact that the climate in the last 100 years shows no variation inconsistent with natural patterns and that there is not one shred of empirical evidence establishing humans as the cause.</p> <p>Isn't there a rule or law that prohibits government agencies from engaging in political campaigns? This report is pure politics backed by pseudo-science. The NCDC should get return to objectively publishing the empirical data, not promoting political agendas.</p> <p>As an engineering scientist who has spent years carefully studying all publicly available data, and as a taxpayer, there are no words to express how intensely I disagree with this misguided, or perhaps deceitful use of public resources.</p> <p>Marshall(s), Public Citizens</p> | <p>The USP is complying with all relevant rules and regulations.</p> <p>Noted.</p> |
| P | McKinnon | Gen* | | | <p>This entire report is a work of fiction and needs to be rewritten to include the real science and not the perversion of science that it portrays.</p> <p>Do something productive like track solar activity and the global temperatures.</p> <p>This thing reads like a chapter of Al Gore's diatribe on Global warming. Look at the facts, not the hype. Extend all the fabricated charts in the report to include the cooling from 2003 until now. CO2 is an insignificant gas in the atmosphere. Go after water vapor and volcanoes, you might even have the authority to control the sun. NOT!</p> <p>This was a total waste of government resources.</p> <p>McKinnon, Public Citizen</p> | <p>The USP synthesizes the results of reproducible tests documented in the peer-reviewed literature.</p> <p>The Global section mentions solar changes and their impact on temperature.</p> <p>The revised version has a different lay out.</p> <p>All carts go to as current as the data allow, usually 2007.</p> <p>Noted.</p> |
| P | McMillan | Gen* | | | <p>I'm a layman on the subject of AGW, but interested since 1979.</p> <p>The specific problems are too numerous, so I'd just like to add my voice to those opposing the publication of the pdf. It sounds like extreme propaganda, and is inappropriate. The science behind AGW is falling apart, and the government should not be cheerleading it.</p> <p>Implementing most any of the proposed "solutions" would be disastrous for the American economy. Since warming has leveled since 1998 and the sun is now in an "extended" minimum, a total rewrite taking into account the concerns of us</p> | <p>Noted.</p> <p>The USP synthesizes the current state of the science.</p> <p>Opinions are not assessed by the USP, only peer-reviewed science. Climate variability, including that caused by ENSO (e.g., the very warm el Nino of 1998) does not end as a result of long-term</p> |

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| | | | | | "deniers" would be the minimum you should do. McMillan, Public Citizen | greenhouse warming as clearly stated in the USP. |
| P | Michaels | Gen | | | <p>Of all of the “consensus” government or intergovernmental documents of this genre that I have reviewed in my 30+ years in this profession, there is no doubt that this is absolutely the worst of all. Virtually every sentence can be contested or does not represent a complete survey of a relevant literature. I believe this is an agenda-driven polemic. The authors, particularly the senior ones, have a track record of being politically very sensitive and responsive. They know that the Congress that receives this document will be dominated, at least in the Senate, by a strengthened majority in search of some “official”, highly inflammatory document which can be used for Findings for legislation mandating stringent near and far-term cuts in carbon dioxide emissions. They know that this document will be used as the basis for an EPA rulemaking on carbon dioxide emissions. They know this, despite their full knowledge that there is no suite of technologies that can accomplish major reductions, and the full knowledge that the only remaining way to achieve such cuts is to make carbon-based energy outrageously expensive. I am reminded of President Eisenhower’s Farewell Address, January 17, 1961:</p> <p>The prospect of domination of the nation’s scholars by federal employment, project allocations, and the power of money is ever present—and is gravely to be regarded. Yet, holding scientific research and discovery in respect, as we should, we must always be alert to the equal and opposite danger that public policy could itself become a captive of a scientific-technological elite.</p> <p>It has always been my worry that climate change would become the vehicle that would bring Eisenhower’s fear to fruition. The CCSP draft is Eisenhower’s fear writ large.</p> <p>The extremely short comment period, and the lack of transparency that was evident at the beginning of that period (when a bogus “password” was required, thwarting immediate review) is further evidence for the agenda-driven nature of this Product. Why not 120 days? What is the rush? Obviously, so people like me—with day jobs—will not have the time to adequately review this document.</p> <p>Let me say that, knowing many of the individuals involved, I am deeply saddened by</p> | <p>The USP synthesizes the totality of the peer-reviewed literature.</p> <p>The goal of this document is clearly stated in the About this Report section.</p> <p>The USP holds scientific research and discovery in respect.</p> <p>Noted.</p> <p>The revised document is being submitted for a second review.</p> |

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| | | | | | what this document says about my profession. It is in that state that I must tender the rest of my review. Michaels , Cato Institute | Noted. |
| P | Michaels | Gen | | | Broad comment on Greenland. CCSP’s reporting on ice sheet collapse, especially with respect to Greenland, is remarkably one-sided, biased, and ignores a large body of the most recent literature. As this stands now, expect strong and repeated public criticism of the CCSP report. Michaels, Cato Institute and University of Virginia | Discussion of the Greenland ice sheets has been removed from the USP. |
| P | Min | Gen* | | | Doctored photos, doctored graphs, poor science with no supporting information. The world has been cooling since 1998 while CO2 emissions have been going up. None of Hansens predictions have come to fact. Your attempt is advertising what is totally unproven conjecture. Your methodology is wrong headed with only one unsupported view in mind. Min, Public Citizen | The USP is a synthesis of peer-reviewed research results. The one photograph that could have been perceived as being altered from the first draft of the USP has been removed. |
| P | Moore | Gen* | | | I believe it is absolutely ridiculous to be considering a plan of this magnitude. It appears that global climate change may be real (though, warming seems to have stopped in 1998 – 10 years ago). However, there is almost no proof that it is human caused. You specify all these hyperbolic doomsday scenarios in the executive summary. This is no way to implement public policy – especially one that expresses a desire to have so much impact on our every day lives. Implementing draconian measures to reduce the emissions of CO-2, which has not been scientifically proven to be a problem, is patently absurd. I urge you to consider the science. These measures will be a severe drag economically. Reduced economic growth will cause more pain and suffering than reducing the global temperature a couple of degrees (more likely zero). This document is surreal, Orwellian. You’re contemplating oversight over building codes? Forest management? Insurance? You’re contemplating a “holistic” approach, but in reading this is there any area of our lives you do not want to control? And, granting that you are right about human CO-2 emissions causing global warming, what about China, India and other developing nations? Their combined CO-2 emissions currently exceed ours and in the future will far exceed them. | How scientists know that anthropogenic emissions are causing the warming is described in the Climate Primer section. Mitigation policy is not substantitatively addressed in the USP. Economic policy is not addressed in the USP. Building codes, forest management and insurance have always taken climate into account. International mitigation policy was not addressed in this report. |

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| | | | | | <p>I am all for reducing pollution, achieving clean air, and working on new technologies. However, this needs to be a slow process, directed by science and facts ... not hyperbole, politics, emotion, or some desire to be liked by the rest of the world (at any cost).</p> <p>Please go back to the drawing board. You need to complete a holistic analysis of the economic impacts of such a plan. And, what will that do to the quality of life of the average American. What will it do to our country's wealth (a much greater indicator of our health and well-being)? What about analyzing the benefits of some warming (if it occurs at all)? Certain areas will surely become more productive agriculturally.</p> <p>The models used to analyze global warming are so fundamentally flawed. We can't predict the weather next month, much less in 50 years!</p> <p>I urge you to reconsider your approach before the "law of unintended consequences" trumps your best intentions. Don't make rash recommendations until we are sure of what it is that we're doing.</p> <p>Thank you for the opportunity to comment. Moore, Public Citizen</p> | <p>The USP synthesizes the science published in the peer-reviewed literature with special emphasis on CCSP SAPs.</p> <p>Mitigation and the economics of mitigation is not addressed in this report.</p> <p>Predicting the weather and the climate are very different problems as described in Chapter 1 of IPCC WG I.</p> <p>Recommendations from the USP are limited to research to narrow the gaps in understanding.</p> |
| P | Morse | Gen* | | | <p>My general comment on this report is that it reads more like a propaganda piece from Greenpeace or the World Wildlife Federation than a formal publication from an ostensibly respectable government organization such as NASA. The Executive Summary in particular deserves special mention as a completely worthless compilation of baseless environmentalist platitudes. A report proclaiming itself to be a "unified synthesis" should be balanced and openly present a range of viewpoints and data sources. Yet this report does not even remotely acknowledge that there is a groundswell of disagreement with the "mainstream" AGW theory among highly qualified climate scientists, many of whom were authors of the IPCC report. Nor does it acknowledge data from the real world that is blatantly contradictory to the claims and projections it contains. This report is shockingly one-sided and epitomizes the overwhelming bias of the AGW community. There are so many problems with this report that it should be abandoned and a new report should be commissioned with a clear mandate to provide a balanced and objective viewpoint. The team that produced this biased</p> | <p>The goal of the USP, as stated in the About this Report section is not to present a range of viewpoints but to synthesize the results of peer-reviewed science.</p> |

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| | | | | | <p>rubbish should be disbanded as they have revealed their gross inability to produce a balanced viewpoint. I will be forwarding these comments to the NASA Administrator and Deputy Administrator, as well as the United States Senate Environment and Public Works Committee.</p> <p>It would take days to provide an exhaustive list of problems, but I will highlight a few of the more important ones:</p> <p>1000-year Temperature / CO2 / Emission Graphic (Page 19): This graphic is based on a notorious graph known as the "MHB Splice" and the "Hockey Stick". The data upon which it was based was cherry-picked and hand-massaged in order to deemphasize the Medieval Warming Period and the Little Ice Age, two periods of time which AGW alarmists would rather ignore because they cast significant doubt on the AGW theory. The MBH Splice was thoroughly debunked and discredited in the Wegman Report. It is shocking that this graphic appears in the report. It reflects either gross incompetence or wilfull dishonesty on the part of the editors of this report.</p> <p>Current Global Temperature Trends: Global temperature as reported by UAH, RSS, HADCRUT and to a somewhat lesser degree, GISS (refer to following comment) all indicate that the hottest temperature in the last decade was 1998 and that temperatures have been decreasing since 2001. During the period since January 2007, temperatures have decreased by almost 1C. In other words, currently there is no global warming, but rather global cooling is taking place. The flattening of temperatures during this decade were not predicted by the GCMs used by the IPCC to make their case for AGW.</p> <p>Over the longer term, one can easily see from the UAH and RSS temperatures graph that there has been in fact virtually no global warming since 1979.</p> <p>There is no mention of the current global temperature trends in the report, which only presents the ridiculous predictions of the GCMs. This is incredibly misleading and again reflects either gross incompetence or wilfull dishonesty on the part of the editors.</p> <p>GISS Data: Data from Dr. Hansen's organization is based on ground stations that are</p> | <p>Noted.</p> <p>The figure on page 19 has been replaced with one from the latest peer-reviewed research that compiles the results of multiple paleo reconstructions.</p> <p>1998 with it very strong el Nino was indeed a very warm year. However, the reviewer's contention of cooling on the order of 1 degree C since 2007 is not supported by the data. Indeed, 2008 year to date (when this response was written) temperatures were warmer than any year prior to 1998.</p> <p>Climate models can not get exact dates of el Ninos or la Nina events to match the real world.</p> <p>UAH and RSS temperature of the lower stratosphere, 1979-2007, show warming at 0.14° and 0.18°C per decade. See <i>Bul. Amer. Met. Soc.</i> July 2008.</p> <p>Current trends are shown in the time series figures.</p> <p>Surface station data used in this report have been adjusted to account</p> |

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| | | | | | <p>widely known to be poorly maintained and poorly situated. Many ground stations are situated in parking lots, next to air conditioning units or near other human influences. The network is so shoddy that it can not be considered credible. (Refer to <http://www.surfacestations.org/>http://www.surfacestations.org/.) The data are also widely known to be manipulated and processed in dubious ways. Hansen's organization is extremely closed when it comes to releasing data and or methodology to facilitate peer-review. Given this is public information, it should be freely available for review. (Refer to <http://www.climateaudit.org/?cat=54>http://www.climateaudit.org/?cat=54.)</p> <p>Further to this, Dr. Hansen's incredible recent statements such as that fossil fuel industry executives should be tried for crimes of humanity show that he has completely lost touch with reality and scientific objectivity and should therefore be removed from his position. Additionally, there should be a government ethics inquiry to investigate the vast sums of money he has personally received from AGW proponents.</p> <p>Projections based on GCMs: All of the projections in the report are based on GCMs which even their authors claim are only "scenarios" rather than forecasts or projections. A recent paper clearly demonstrates that GCMs are based on inherently flawed principles and perform so poorly that they are essentially worthless for making predictions. The paper which was published in the Journal of Hydrological Sciences is the following:</p> <p>On the credibility of climate predictions D. KOUTSOYIANNIS, A. EFSTRATIADIS, N. MAMASSIS & A. CHRISTOFIDES Department of Water Resources, Faculty of Civil Engineering, National Technical University of Athens, Heroon Polytechneiou 5, GR-157 80 Zographou, Greece (Note: Article part of the electronic file) Morse, Private Citizen</p> | <p>for inhomogeneities as process which has been shown in the peer-reviewed literature to prevent remove biases that might have been caused by changes to locations with poor citing.</p> <p>Comments by Dr. Hansen are irrelevant to this report.</p> <p>The USP is based on a synthesis of the totality of the peer-reviewed literature.</p> <p>Noted.</p> |
| P | National Wildlife Federation | Gen | | | <p>Excellent graphics. This federal report is one of the best to date in terms of clearly making the connections between human activities, emissions scenarios, and impacts.</p> <p>National Wildlife Federation</p> | <p>Thank you for your comment.</p> |
| P | Nelson | Gen* | | | <p>As I have already said many times, "what direction would you expect the</p> | <p>The USP is not based on the opinions of individuals. Rather it is</p> |

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| | | | | | <p>thermometer to be going after an ice age”. I think you people on the ‘concerned’ side of this issue give yourselves way too much credit. We are talking changes on a global level. I just don’t think the human race has the power to affect the climate of our planet. Further, there are other changes such as atmospheric pressure changes and size changes all through the solar system. It’s not just the earth but all the planets are morphing and changing. This is just a normal global process and we have neither the ability nor the right to stop it. Al Gore..... put a sock in your mouth and just shut up!!</p> <p>Nelson, Private Citizen</p> | <p>based on the results of the totality of the peer-reviewed literature.</p> |
| P | Nichols | Gen | | | <p>I have 30 years experience as an atmospheric physicist with 5 years in Climate Change as a lead Air Force scientist on several of the top programs in the military assessing Climate Change and their impacts.</p> <p>This document is fatality flawed. The information provided is so unbalanced and incomplete, only macro comments can be submitted. First, its premise is based on the use of model projections. When compared to observational datasets, they cannot replicate within proven, scientific protocols and standards, coherent changes in the natural system such as PDO, ENSO and others as has been published by numerous significant studies. Since this discrepancy is fundamentally ignored, it invalidates this as a professional, scientific document since the information provided is speculative. Published studies also consistently and clearly show no or negative skill of models compared to these natural system changes invalidating their inputs or severely limiting information gleaned from them without the heavy emphasis of these caveats. It is relevant to mention atmospheric modeling improvements have essentially ceased in the past 15 years. Analysis shows the ability to handle water vapor, the primary greenhouse gas, as a prime factor which further calls into question this document as it is presented.</p> <p>Second, the document does not adequately address the observational discrepancies that are increasingly evident and recent findings of the roles of natural factors compared to land use and human inputs and their total impacts. It is noteworthy that model projections from the 1980’s and 1990’s show an increasing divergence from observational datasets that must be pursued since model warming is grossly overstated.</p> | <p>Noted.</p> <p>The information in the USP has been synthesized from the totality of the peer-reviewed research.</p> <p>Global climate models can not be expected to reproduce el Ninos and other oscillations on the exact same time scales that the real world generated, which makes verification of individual years problematic. Though, as IPCC WG I Figure 1.1 shows the general trend is well reproduced by models.</p> <p>IPCC WG I Figure 1.2 clearly shows many improvements made in global climate models over the last 15 years contrary to the reviewer’s statement.</p> <p>If by observational discrepancies the reviewer means the stated divergence between model projections and observations, IPCC WG I figure 1.1 shows excellent agreement between observations of global mean temperature and model projections from 1990, 1996 and 2001.</p> |

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| | | | | | <p>Decades from today, if this document is published as is, it will be an example of the improper use of science and show the roles of ignorance and nonobjective groupthink. I've never seen such a unscientific process trying to address a scientific issue. This document must address these, as is, it is an example of the overstatement and misapplication of our current understanding of the science of Climate Change and the abuse and misuse of proven scientific and management standards.</p> <p>Without addressing these properly, we are only inviting more rancor and increased degradation of our credibility with time as these discrepancies mount.</p> <p>Nichols, NOAA</p> | <p>The USP synthesizes the current state of climate change science.</p> <p>Noted.</p> |
| P | Oehler | Gen | | | <p>My reading of the draft paper is that it is primarily a call to action to stem harmful man-induced pollutants before irreparable harm is done to the ecosystem. If that is indeed the goal of the paper, then I would say that, with the slick use of photographs and selected graphics, it probably does its job well to the non-scientific public.</p> <p>My concern is that it also tries to say it is a science-based paper. I maintain it is far from that. There are many good treatments of what constitutes good science. A starting point could be a science policy paper published by the National Science Foundation (NSF): http://www.nsf.gov/policies/nsfinfoqual.pdf . Fundamental to good science are peer review, original and supporting data used in statistical data products, transparency (especially important, says the NSF, for influential papers), and reproducibility. Taking these in order:</p> <p>Peer review I commend you for publishing the draft for public comment. But, this should not be viewed as a substitute for the more traditional scientific peer review. In the more traditional peer review, the reviewer would have access to the data and methods. Not only has this paper not had a traditional peer review, it appears that many of the papers that it depends upon for conclusions also have not been peer reviewed. For example, Dr. James Hansen, who your paper uses as a source for some of the most important conclusions, has, as I understand, not subjected his work to peer review. To do so would require him to divulge the details of his models—something he has been unwilling to do. Moreover, some of the papers referenced have not yet been published and many graphics are “under development”.</p> <p>Original and supporting data used in statistical data products Judgments of the rise in surface temperatures depend critically on the many temperature-monitoring</p> | <p>The goal is clearly stated in the About this Report section. The use of photographs has been greatly diminished in the revised version of the report.</p> <p>Responses are made to each point below.</p> <p>Concurrent with the public review, the USP underwent peer review by a Blue Ribbon panel of experts who are listed on the inside front cover.</p> <p>Dr. Hansen was not involved in this report. However, it should be noted that he has and continues to publish a great deal of peer-reviewed papers.</p> |

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| | | | | | | <p>stations. But, many of these stations have come and gone while the local environment for others has changed markedly over the years. Some scientists estimate that this alone could account for half of the reported temperature rise. If I understand correctly, your analyses correct for at least some of these, but I have no way of knowing because the original and supporting data are apparently not available for examination.</p> <p>Transparency The NSF defines transparency as “Transparency refers to a clear description of the methods, data sources, assumptions, outcomes, and related information that will allow a data user to understand how the information product was designed or produced.” The draft paper depends to a large extent on computer modeling. There is nothing more opaque in the whole global warming debate than the various proprietary computer models.</p> <p>Reproducibility Given the absence of transparency, it is hard to reproduce many results—try as I might using all the information I could find on the Internet. Reproducibility is a fundamental tenet of good science.</p> <p>The graph on the top of page 26 is one I would dearly like to reproduce. It gets to the heart of your argument. If there is a more important statement of the effect of man on the environment, I do not know of one. Other scientists can hypothesize reasons to explain the rise in temperatures the last half of the 20th century. But if this chart is true—end of argument—no need to go further. You cannot just leave this to ‘my computer model says so’. Even just looking at the lines brings up important questions. For example, I would assume that the black line “Observations” minus the blue line “Natural Only” would lead to human only. But look at the spike at roughly 1998. This might at first be ignored as noise, but this is the spike that Dr. Hansen pointed out as the most significant event in the past 1000 years of global temperatures. There is no such spike in the “Natural Only” blue line. The subtraction then would put that spike in the human category—inconsistent with the thrust of your paper that human CO2 is increasing steadily. So, it is natural, and the model missed this most significant event, putting into question Hansen’s emphasis on it, or is it indeed somehow man caused? Without greater reproducibility, I maintain that this graph should be viewed as speculation at best.</p> <p>To the NSF list, I would like to add:</p> <p>Selection of data ranges Any exposition of man-induced global surface temperature increases must cover enough history to account for possible natural causes. I cannot read the date ranges on many of the graphs of interest, but one</p> | <p>The references and links to the data are more clearly made in the revised version. There is a tremendous body of peer-reviewed research that indicates that the observational surface temperature data are reliable once they undergo adequate quality control and homogeneity adjustments.</p> <p>The models which produced output used in this paper have been described in the peer-reviewed literature.</p> <p>Links to the available data and model output are now provided in the revised version allowing the analyses shown to be reproduced.</p> <p>The figure on the top of page 26 is reproduced from IPCC WG I and will be more accurately described in the revised version. The observations show a spike in 1998 because of the large el Nino. The model output is a result of multiple models which do not produce el Ninos all at the same year. Hence they do not have the spike. The natural only line is the models run with only natural forcing (volcanoes and changes in solar energy). The human and natural line is the models run with volcanoes, solar energy, CO2, aerosols, etc. Please note that every single model showed the same separation: the warming can not be reproduced without human contributions to the atmosphere.</p> |

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| | | | | | | <p>example might make the point. On page 25, you show three sketches showing the decline of ice over Greenland from 1992 to 2005. Recalling history, though, the Vikings settled Greenland around the 10th century, when it was warm, but were driven out when the ‘little ice age’ came in the 15th century. Also, there was apparently an abrupt fall in Greenland ice in the 1930s, a time Dr. Hansen has recently learned was a warm period comparable to today’s.</p> <p>I worry, too, that many of the graphs do not go to 2008. Is there a reason? For example, the global temperature rise chart on page 22 does not show the apparent fact that global temperatures have been cooling since about 2002—confirmed by GISS, Hadley, UAH, and a hint from the Argo buoys. That could potentially put a hole through the heart of your argument, so it needs some data and discussion.</p> <p>Account for science-based alternative views Of course, for every subject that has consequences, there are differing views. Global warming is no exception. Good science examines alternative viewpoints that have passed scrutiny, either through the peer review process or simply public acceptance. This draft paper does not on some important points. An example, there is growing discussion of the role of solar cycles in the earth’s climate changes. Not so much the number of sunspots alone in the well-known 11-year sunspot cycle, but the variations in the length of the 11-year cycle combined with the 80-100 year sunspot cycle that has been observed for some time. A case can be made that these account for much of the observed rises and falls in global temperatures in the 20th century and for the temperature cycles going back 400+ years.</p> <p>The Russian Academy of Sciences, for one, and not the only one, predicts a coming global cooling. Many respectable scientists are now saying that global warming may pause until at least 2015. I do not see how this can be ignored.</p> <p>Finally, I do not think you should ignore reports that there has been ‘global’ warming on Mars, Jupiter, and apparently now observed on Titan. If true, it would be another reason to question the whole premise of this paper. Do you not think this should be addressed?</p> <p>In sum, I am very disappointed that your paper is not more science based—or at least presented as good science. I recommend that it be pulled and reworked some so that it can withstand more scrutiny from well-intentioned scientists. The public will not understand what is good science, so it behooves all scientists, especially those associated with this report, to make this a good science paper, in the terms</p> | <p>The date ranges on time series have been unified to primarily cover the entire period of record and those of trend maps to cover the last 15 years.</p> <p>The fact that current warming is being caused by human contributions of greenhouse gases should not be taken as implying that there were never any other reasons for the climate to change over the last many thousands of years. But we now monitor solar output so we know its influence on the climate. The graphs do not yet go up to 2008 because 2008 is not yet complete. 2008 year to date (date being the time this response was written) temperature is slightly cooler than the last few years but warmer than any year between 1880 through 1997.</p> <p>The report synthesizes the entirety of the peer-reviewed literature.</p> <p>The overwhelming majority of the peer-reviewed literature indicates continued warming should be expected.</p> <p>It should be noted that the data from Mars has a short period of record and the Martian year is much longer than Earth’s. Far more solid science is needed before discussion of this would be appropriate for the USP.</p> <p>The report is undergoing major revisions.</p> |

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| | | | | | <p>of the NSF. Otherwise it will do a great disservice and be viewed by legitimate scientists as propaganda and possibly do more harm than good. Thank you for allowing me to comment on this draft. Oehler, Retired</p> | <p>Thank you for your comments. They were quite thoughtful and also politely stated.</p> |
| P | Pielke, Sr. | Gen | | | <p>Comment #1 is just one example of the exclusion of peer reviewed studies in the draft CCSP report.</p> <p>The Report is co-chaired by scientists (Tom Karl, Jerry Melillo, and Tom Peterson) who have a conflict of interest in the assessment as they are evaluating significant portions of their own research. This real conflict of interest was documented in the public comment for the first CCSP report</p> <p>Pielke Sr., Roger A., 2005: Public Comment on CCSP Report "Temperature Trends in the Lower Atmosphere: Steps for Understanding and Reconciling Differences". 88 pp including appendices. http://climatesci.colorado.edu/publications/pdf/NR-143.pdf</p> <p>where it is summarized for that report that</p> <p>"The process for completing the CCSP Report excluded valid scientific perspectives under the charge of the Committee. The Editor of the Report [Tom Karl] systematically excluded a range of views on the issue of understanding and reconciling lower atmospheric temperature trends. The Executive Summary of the CCSP Report ignores critical scientific issues and makes unbalanced conclusions concerning our current understanding of temperature trends."</p> <p>"Future assessment Committees need to appoint members with a diversity of views and who do not have a significant conflict of interest with respect to their own work. Such Committees should be chaired by individuals committed to the presentation of a diversity of perspectives and unwilling to engage in strong-arm tactics to enforce a narrow perspective. Any such committee should be charged with summarizing all relevant literature, even if inconvenient, or which presents a view not held by certain members of the Committee."</p> <p>The current draft CCSP report ignored this recommendation. As a result we do not have a unified synthesis product but a document that promotes a particular</p> | <p>The co-chairs and indeed all members of the FAC are widely recognized as experts in their fields. Naturally some of the work being assessed is therefore their own work. The only way to avoid this would be to have the report written by individuals who aren't familiar with the field. Given the choice, expertise should be preferred.</p> <p>Noted.</p> <p>The USP synthesizes the totality of the peer-reviewed literature and does not exclude any valid scientific perspective that is based on the peer-reviewed literature.</p> <p>The goal of the USP is not to present diverse perspectives but rather to synthesize the peer-reviewed literature on the topic.</p> |

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| | | | | | <p>narrow perspective on climate science based on the prejudices of the Editors.</p> <p>The recommendation in this Comment is that the Draft Report be rejected.</p> <p>A new independent assessment Committee should be appointed in order to present policymakers with an accurate assessment of the diversity of scientifically supported conclusions regarding the role of humans within the climate system. This includes the evaluation of the vulnerabilities to important environmental and societal resources from natural and human-caused climate variability and change.</p> <p>Pielke, Sr., University of Colorado</p> | <p>The USP is based on the totality of the peer-reviewed literature.</p> <p>Noted.</p> <p>Noted. The vulnerabilities of important environmental and societal resources due to climate change are thoroughly assessed in the USP and the impact of climate variability is often noted.</p> |
| P | Pogue | Gen | | | <p>The organization and fluid and sequential layout in the draft report contributed to the ease of reading. The layout allowed for an easier approach to addressing specific sections for comment. However, it would have been easier, for review purposes only, to have had a lined format for quick reference for suggested changes for those collating these comments.</p> <p>Pogue, CFM – ASFPM Coastal Committee Co-Chair</p> | <p>Thank you for your comment.</p> <p>The revised version which will be sent out for review has line numbers.</p> |
| P | Pogue | Gen | | | <p>This report lacks a discussion about Federal emergency initiatives underway since 1968 through the Federal Emergency Management Agency’s (FEMA’s) National Flood Insurance Program (NFIP) and emergency management efforts through the Stafford Act. Both of these programs have funded mandates and mitigation grant programs that address many of the impacts of climate change mentioned in this report, such as flooding; sea level rise and coastal inundation; the need for better building standards and building locations; heavy downpours; hurricane intensity and frequency; cold season storms; and greater wind speeds, rain fall rates, and storm surge levels. The Stafford Act in particular mandates that both States and local communities complete all-hazards mitigation plans that integrate potential and past hazards that may impact their communities, and address those hazards through mitigation actions including zoning, building standards, and other means to reduce the damages caused by storm events. In the event that these plans are not completed, public disaster monies will not be awarded to those communities and States that do not have a FEMA-approved hazard mitigation plan.</p> <p>Pogue, CFM - ASFPM Coastal Committee Co-Chair</p> | <p>Thank you for your comment. We reference the work of FEMA in floodplain management in the Society section of the revised document.</p> |
| P | Polansky | Gen | | | <p>Reference doc: Memo issued by Vice Admiral (Ret.) Conrad Lautenbacher dated Feb. 21, 2008 stating on p. 1, section 1:</p> | <p>Thank you for your comments but these are not related to revisions in the USP text that the FAC is revising.</p> |

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| | | | | | | <p>http://www.climate.noaa.gov/ccsp/pdf/USP_Establishment.pdf]</p> <p>“...discussions with the White House have resulted in a decision the National Atmospheric and Oceanic Administration (NOAA) should produce a synthesis document that will integrate and evaluate the findings of the US CCSP in the context of current and projected global climate change trends.” What are the names and / or positions of the White House staff with whom these discussions took place? What was the impetus for these discussions? For what purpose did White House officials offer for directing the production of this synthesis document?</p> <p>Reference doc: Memo issued by Vice Admiral (Ret.) Conrad Lautenbacher dated Feb. 21, 2008 stating on p. 1, section 2: “The Synthesis Product will evaluate and integrate the findings of the CCSP in the context of current and projected global climate change trends, both human-induced and natural. The product will analyze the effects of current and projected climate change on: ecosystems and biological diversity; agriculture; energy production and use; land and water resources, transportation, and human health and social systems.” This language is strikingly similar to the provision of law in the Global Change Research Act of 1990, PL 101-606, Section 106(2) which stipulates that there shall be an assessment which, in part, “(2) analyzes the effects of global change on the natural environment, agriculture, energy production and use, land and water resources, transportation, human health and welfare, human social systems, and biological diversity.” Our understanding is that the CCSP has already complied with the August 21, 2007 US District Court order (No. C 06-7062 SBA) requiring a national assessment of climate change impacts by May 31, 2008 with its May 29, 2008 product titled, “Scientific Assessment of the Effects of Global Change on the United States.” www.climate.noaa.gov/ccsp/pdf/USP_Establishment.pdf).</p> <p>In addition, the FACA- required charter of the CCSP development committee states,</p> <p>“The Secretary of Commerce, pursuant to duties imposed by law upon the Department, including the Global Change Research Act of 1990 (Pub. L. No. 101- 606, Section 106), and the Federal Advisory Committee Act (5 U.S.C. App. 2), and with the concurrence of the General Services Administration, hereby establishes the Department of Commerce National Oceanic and Atmospheric</p> | <p>Noted.</p> <p>Noted.</p> |

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| | | | | | <p>Administration (NOAA) Climate Change Science Program (CCSP) Synthesis Product Development Committee (SPDC).”</p> <p>These statements lead the reader to believe that the White House, NOAA, and/or the CCSP is offering the Unified Synthesis Product as an additional satisfaction of Sec. 106 of the GCRA. Is this true? If so, will the USP meet all the criteria that such an assessment is required to meet, both in terms of process and content, e.g., in notification, review, compliance with FACA, and in compliance with the CCSP Guidelines for all of the 21 SAPs being produced?</p> <p>General comment/question: Is the USP considered to be another Synthesis and Assessment Product? If so, why are there so few scientific notations to support the scientific statements made?</p> <p>General comment/question: Given that NOAA was charged to “develop a draft product that will integrate and evaluate the findings of the U.S. Climate Change Science Program in the context of current and projected globalclimate change trends, both human-induced and natural” as it states in the charter (www.climate.noaa.gov/ccsp/pdf/usp_draft_charter.pdf), then why didn’t the White House, NOAA, and/or the CCSP wait until all of the 21 Synthesis and Assessment Products were complete before attempting to synthesize their content? (In other words, what was the rush to get this out before a true synthesis could be developed?)</p> <p>Polansky, Climate Science Watch</p> | <p>The USP is complying with all relevant rules and regulations.</p> <p>The revised draft is more heavily referenced.</p> <p>The vast majority of the SAPs have been released at least in draft form and contribute to the information presented in the USP.</p> |
| P | Polansky | Gen | | | <p>Did each of the 30 lead authors listed on the page after the cover page of the report review and approve all of the sections of the report prior to releasing in draft form on July 17, 2008?</p> <p>Polansky, Climate Science Watch</p> | <p>The full FAC team has had the opportunity to comment on each major revision of the USP document.</p> |
| P | Polansky | Gen | | | <p>It is apparent that the writing style, graphics, and overall presentation are geared towards a general, “lay” audience (i.e. non-scientists), however, there is no stated purpose for this approach. What is the intended audience for the USP? And, given that many of the statements made regarding climate change impacts and challenges could easily be interpreted as a “call to action” --- who are you calling to action, and what would the federal government under the Bush administration</p> | <p>The second draft has a more dispassionate scientific tone.</p> |

Unified Synthesis Product: Global Climate Change Impacts in the United States (1st Draft)

PUBLIC COMMENTS

July/August 2008 Reviewer Comments and Responses (Final Revision, 1/12/09)

Comment Type: BR – Blue Ribbon Panel, CC – Climate Communicators, G – U.S. Government, P – Public

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| | | | | | like to see acted upon, in the way, for example of adaptation or mitigation of global climatic disruption? Polansky, Climate Science Watch | |
| P | Polansky | Gen | | | The CCSP Guidelines for the SAPs require a 45-day comment period for public review and comment. Why was there only 28 days permitted for the USP? (Again, what's the rush?) Polansky, Climate Science Watch | The revised draft is also going out for public review. |
| P | Polansky | Gen | | | In general, we see a troubling lack of transparency in the objective for producing this document in the first place, the timing of its intended release, the audience it is intended to serve, the intended or expected outcomes, the guidelines for the process followed from start to finish, and the rationale for the September target date for final release. Polansky, Climate Science Watch | The transparency to the source material has been improved by the additional of many references. |
| P | Pollock | Gen* | | | The thirty (30) day period for comments is so egregiously small as to clearly indicate that solicitation of comments is merely a pro forma exercise, all "minds" having already been made up. Pollock (Private Citizen) | The second draft is also going out for public review. |
| P | Schmaltz | Gen | | | My overall impression of this report is that it is one full of speculation, conjecture and unproven talking-points that will mislead and misinform the public. How can a public agency legally disseminate information that is so blatantly false? The report, I feel, is an abuse of public resources and contains outright lies spread by an agency who should have more respect for the scientific process than it apparently does. Schmaltz, Public Citizen | The USP is based on the totality of the peer-reviewed research. |
| P | Sheridan | Gen* | | | Apparently you are prepared to consider comments from non US citizens, hopefully this means candid opinion. As I see it this report 'Global Climate Change. Impacts in the United States' is designed and written to confirm the hypothesis that human activity is responsible for a detectable divergence in the normal changes to which our climate is prone. For this conclusion to be sustained the authors must be certain beyond reasonable doubt that the scientific evidence on which the case is based is incontrovertible. IF this were so then inevitably it imposes on any rational human pressures to believe that a sufficient understanding of the whole global climate dynamic now exists. From this predictions can be seen as reliable platforms for future policy. | All comments are seriously considered. No. The USP is a synthesis of the peer-reviewed research results which confirm the hypothesis that human activity is responsible for the detectable divergence of climate. See IPCC. See IPCC for definitive attribution statements which the USP quotes. |


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| | | | | | | <p>Given the reputation of the NOAA, NASA and other authorities, great weight must be attached to this document. Influences that make it difficult for policy makers to ignore.</p> <p>So then. Is this draft report really that accurate? Do we in fact now know beyond any doubt that the activities of humans is behind a perturbing in the global climatic system? Are the various charts and reports here suggestive of greater extremes in this or that event really accurate? Or, are we really just facing more or less normal circumstances that provide the chance for us to stop, look at what we are doing and plan for a different future?</p> <p>From extensive reading over the past fifteen years my own opinions have shifted from worries of imminent catastrophe to a growing realisation that the fundamentals of our impact on the planet is less than those whose overt political ambitions have led them to take this issue and exploit it. The trouble facing by those in authority is that the population at large, both in the United States and here in the United Kingdom, largely ignore the desperate efforts of the media and others to generate fear. Most are much more concerned with the price of what goes in the petrol tank or the cost of the weekly groceries. Resentments that have grown as prices have increased, outcomes that are to some extent blamed on politicised meddling.</p> <p>Of course the foregoing statement does not imply that this report is wasted, but it should be much less authoritative about circumstances that are far from certain. The reality is that the science is far from certain, something that led over 31,000 senior American scientists and researchers to recently sign a voluntary declaration expressing just that point. Worryingly trying to construct a future on deceit will not induce long term public support, an essential component to bring about the changes the authors hope to influence. This is a pity because the US needs a plan for the future given that we cannot hope to live forever by taking, using and throwing away.</p> <p>What might be a valid starting point is to hold a constructive debate about providing sufficient energy for the American people and its economy, the most important facet to both its security and of course the climate. Whoever the next President is</p> | <p>Noted.</p> <p>The report has increased its use of error bars and uncertainty statements to more accurately reflect the reliability of the information provided.</p> <p>The USP does not summarize opinions but rather synthesizes the results of reproducible peer-reviewed research. See IPCC WG I, chapter 1 for more information on this important distinction.</p> <p>The USP does not summarize opinions but rather synthesizes the results of reproducible peer-reviewed research. See IPCC WG I, chapter 1 for more information on this important distinction.</p> <p>“Science may be stimulated by argument and debate, but it generally</p> |

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| | | | | | <p>perhaps he should start by inviting Dr.Robert Bussard or someone of his standing to oversee a national effort to explore how best to supply this power. How that is done will best resolve these concerns in such a way that ensures enduring public support. In short this report should be rewritten to reduce its use of scare, an opportunity is being wasted to revitalise the US economy on a sustainable level by dividing the population between those who are adherents of the human induced global warming hypothesis and those who are not.</p> <p>Sheridan, Citizen of England</p> | <p>advances through formulating hypotheses clearly and testing them objectively.” Therefore, “it is not the belief or opinion of the scientists that is important, but rather the results of this testing.” IPCC, WG I, Chapter 1.</p> <p>The report has been revised to use a more dispassionate scientist tone.</p> <p>Thank you for your comments.</p> |
| P | Sherwood | Gen | | | <p>Overall: an impressive and readable summary with good use of examples. Congratulations to the authors. Sherwood, Yale University</p> | <p>Thank you for your comment.</p> |
| P | Singer | Gen | | | <p>The basic purpose of the Unified Synthesis Product is to serve as a basis for future regulatory policies. The crucial issue therefore is to know whether natural factors or human factors are more important in shaping the climate. The IPCC claims to be between 90 to 99 percent certain that human factors, in particular the release of GHG, are responsible for most of the observed climate warming of the 20th century. On the other hand, the NIPCC report “Nature, Not Human Activity, Rules the Climate” [2008] presents an opposing view. Both reports are produced by teams of reputable international scientists; both reports are based on published research papers; both reports have been widely disseminated. The IPCC Report presents no firm evidence to support its conclusion; the CCSP-USP similarly presents no evidence, as discussed above. On the other hand, the NIPCC presents credible evidence against a significant human contribution to the warming observed over the last 30 years, the weather-satellite era. If the NIPCC argument is accepted, then there’s little point to the CCSP-USP report and its conclusions and recommendations.</p> <p>Recommendations:</p> <p>***Our overall recommendation in this Comment is that the Draft CCSP-USP report be rejected. A new independent Synthesis Committee should be appointed in order to present policymakers with an accurate assessment of the diversity of scientifically supported conclusions regarding the role of humans within the climate system. This must include also the evaluation of the vulnerabilities to important environmental and societal resources from both</p> | <p>The purpose of the USP is clearly stated in the About this Report section and makes no mention of regulatory policy. “Science may be stimulated by argument and debate, but it generally advances through formulating hypotheses clearly and testing them objectively.” Therefore, “it is not the belief or opinion of the scientists that is important, but rather the results of this testing.” IPCC, WG I, Chapter 1. The USP is based on a synthesis of the entire peer-reviewed record.</p> <p>The USP is not intended to represent the diversity of opinions but rather synthesize the entire peer-reviewed research with special emphasis on the CCSP SAPs.</p> |

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| | | | | | <p>natural and human-caused climate variability and change.***</p> <p>The scientific dispute of NIPCC vs. IPCC must be settled before any credible attempt is made to predict future climate change and its impact on the United States, especially its regional impacts.</p> <p>Singer, Science & Environmental Policy Project</p> | <p>I do not believe the NIPCC was peer-reviewed, therefore, since the USP synthesizes peer-reviewed literature only, the NIPCC is not directly relevant.</p> |
| P | Singer | Gen | | | <p>References submitted to support comments.</p> <p>CCSP-SAP 1.1. 2006. Temperature trends in the lower atmosphere: Steps for understanding and reconciling differences. Washington, DC</p> <p>Dahl-Jensen, D. et al. 1999. Past temperature directly from the Greenland Ice Sheet. Science 282: 268-271.</p> <p>Douglass, D.H., J.R. Christy, B.D. Pearson, and S.F. Singer. 2007. A comparison of tropical temperature trends with model predictions. Intl J Climatology (Royal Meteorol Soc). DOI:10.1002/joc.1651.</p> <p>Fischer, H., et al. 1999. Carbon dioxide in the Vostok ice core. Science 283: 1712-1714.</p> <p>Hansen, J.E. 2006. The threat to the planet. New York Review of Books 53, July 13, 2006.</p> <p>Holgate, S.J. 2006. On the decadal rates of sea-level change during the twentieth century. Geophys Res Lett 34. DOI: 10.1029/2006GL028492,2007.</p> <p>IPCC-TAR 2001. Climate Change 2001: The Scientific Basis. Contribution of Working Group I to the Third Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press.</p> <p>IPCC-AR4 2007. Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press.</p> <p>Keigwin, L.D. 1996. The Little Ice Age and Medieval Warm Period in the Sargasso Sea. Science 274: 1504-1508.</p> <p>Kerr, R.A. 2007. Humans and nature duel over the next decade's climate. Science 317: 746-747.</p> <p>Kerr, R.A. 2000. Dueling Models: Future US Climate Uncertain. Science 288:2113</p> <p>Kirkby, J. 2007. Cosmic Rays and Climate. Surveys in Geophysics 28, 333–375, doi: 10.1007/s10712-008-9030-6</p> <p>Loehle, C., 2007: A 2000-year global temperature reconstruction based on non-tree-ring proxies. Energy and Environment 18:1049-1058.</p> <p>Mann, M.E., R.S. Bradley and M.K. Hughes. 1999. Northern hemisphere temperatures during the last millennium. Geophys Res Lett 26, 759-762</p> <p>McIntyre, S. and R. McKittrick 2003. Corrections to Mann et al. (1998) proxy data base and northern hemisphere average temperature series. Energy & Environment 14: 751-777.</p> <p>McIntyre, S. and R. McKittrick 2005. Hockey sticks, principal components and spurious significance. Geophysical Research Letters 32 L03710.</p> | <p>Noted.</p> |

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| | | | | | <p>Monckton of Brenchley, C. 2008. Climate Sensitivity Reconsidered. Physics and Society 37, 3:3-6</p> <p>National Assessment for Climate Change (NACC) 2000. Climate Change Impacts on the United States. The Potential Consequences of Climate Variability and Change. Available at http://www.usgcrp.gov/usgcrp/Library/nationalassessment/overview.htm.</p> <p>National Academy of Sciences, 2001. "Climate Change Science: An Analysis of Some Key Questions" National Research Council, Washington, DC</p> <p>Neff, U., et al. 2001. Strong coherence between solar variability and the monsoon in Oman between 9 and 6 kyr ago. Nature 411: 290-293.</p> <p>Oreskes, N. 2004. The scientific consensus on climate change. Science, 306, 1686, 3 December 2004 (http://www.sciencemag.org/cgi/content/full/306/5702/1686). --and Correction. Science 307, 355, 2005</p> <p>Rahmstorf, S. 2007. A semi-empirical approach to projecting future sea-level rise. Science 315: 368-370.</p> <p>Schulte, K-M. 2008. Scientific Consensus and Climate Change. Energy & Envir 19, 281-286</p> <p>Singer, S. F. 1997, 1999. Hot Talk Cold Science. The Independent Institute, Oakland CA.</p> <p>Singer, S. F. ed. "Nature, Not Human Activity, Rules the Climate: Summary for Policymakers of the Report of the Nongovernmental International Panel on climate Change," Chicago, IL: The Heartland Institute, 2008. Available at http://www.sepp.org/publications/NIPCC_final.pdf</p> <p>Spencer, R.W. 2008. Climate Sensitivity has been overestimated. Senate EPW Committee testimony. 22 July</p> <p>Svensmark, H. 2007. Cosmoclimatology: a new theory emerges. Astronomy & Geophysics 48: 1.18-1.24.</p> <p>Svensmark, H., et al. 2007: Experimental evidence for the role of ions in particle nucleation under atmospheric conditions. Proc. Roy. Soc. A 463: 385-396.</p> <p>Toscano, M.A. and I.G. Macintyre 2003. Corrected Western Atlantic Sea Level Curve for last 11,000 years. Coral Reefs 22: 257-270.</p> <p>Trupin, A. and J. Wahr, 1990. Spectroscopic analysis of global tide gauge sea level data. Geophysical Journal International 100: 441-453.</p> <p>Wegman, E., D.W. Scott, and Y. Said 2006. Ad Hoc Committee Report to Chairman of the House Committee on Energy & Commerce and to the Chairman of the House sub-committee on Oversight & Investigations on the Hockey-stick Global Climate Reconstructions. US House of Representatives, Washington DC. Available at http://energycommerce.house.gov/108/home/07142006Wegman_Report.pdf.</p> <p>Singer, Science & Environmental Policy Project</p> | |
| P | Singer | Gen* | | | <p>The USP is an advocacy document and lacks any semblance of balance</p> <p>The USP is an advocacy document, not an objective assessment. As stated on p.15, it presents the "expert judgment of the author-team based on the best available evidence." But it seems to be based entirely on the unsupported assumption of human-induced (anthropogenic) global warming, or AGW. The scientific</p> | <p>The USP synthesizes the entirety of the peer-reviewed research. As clearly stated on page 15, the expert judgment sentence refers to likelihood statements.</p> <p>Human-induced global warming is supported by a myriad of peer-reviewed papers.</p> |

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| | | | | | <p>arguments against AGW (for example, as presented in the NIPCC report [2008]) are ignored, even though they are well known to the government. This serious lack of balance makes the USP of little value as a document to support government policy. It fails to meet the legal requirements for an objective scientific assessment.</p> <p>b. General comment #2: The USP lacks scientific documentation and cannot be taken seriously. The USP throughout makes claims/assertions/statements that are unsupported; this is quite improper for a report that aspires to be taken seriously as a scientific document. The USP should at least carry detailed references to published CCSP-SAP reports (only 10 published so far out of 21), to the 2007 IPCC report, or to publications in peer-reviewed journals – with page numbers and full quotes.</p> <p>c. General comment #3: The draft USP should be rejected. In addition to the basic problems listed above, the USP suffers from a conflict of interest. It was prepared by an author-team involved in writing the underlying CCSP reports. As a result we do not have a unified synthesis product but a document that promotes a particular narrow perspective on climate science based on the prejudices of the editors. ***It is recommended that a new USP be prepared by an author-team that includes independent scientific experts.*** Singer, Science & Environmental Policy Project</p> | <p>The USP is complying with all relevant rules and regulations.</p> <p>The revised version of the USP is more heavily referenced. See comment above.</p> <p>The USP FACA incorporates a wide range of expertise to bear on a wide range of impacts. To not include authors of the USP SAPs is to not include the leading experts in the field. This is particularly a problem if the USP is, as clearly stated in the About this Report section, to synthesize the findings of the SAPs.</p> |
| P | Smith | Gen | | | <p>For the 1979 to 2007 period, global temperatures increased at a rate of 0.14 to 0.17C per decade. The report needs to explain why the rate of increase is expected to accelerate. Smith, Richard (retired)</p> | <p>This is now explained in the Climate Change Primer section of the report.</p> |
| P | Sneath | Gen | | | <p>I have worked in government and in political arenas for over 30 years and I have learned to quickly discern between what is an analytical report and what is an advocacy paper.</p> <p>It disheartens me that the Unified Synthesis Product Global Climate Change in the United States document is clearly an advocacy paper. As a result, I believe you will discover that over time the credibility of this document will decline quickly and the reputations of its authors will have been poorly served by this approach.</p> | <p>Noted.</p> <p>The revised version of this report has a tone more in keeping with that of a dispassionate scientist and it has been scrubbed to remove statements that could reasonably be construed as advocacy.</p> |

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|  | | | | | | <p>Clearly this document has been prepared in order to persuade and not to inform. It is not a balanced and objective analysis of the various aspects - positive and negative - and associated costs of the climate change issues.</p> <p>A report that lacks credibility is utterly useless for all purposes except for political persuasion. Might I suggest that political persuasion is not an appropriate responsibility of a publicly-financed, public institution.</p> <p>Under no circumstance is it warranted or justifiable to pursue a policy of "the end will justify the means". The ultimate consequences will be to your character, integrity and reputations.</p> <p>This report needs a complete rewrite with a determination to disseminate an objective, balanced, informed analytical review of the issues. Just the facts.</p> <p>Please keep in mind that it is natural tendency of all humans (myself included) to filter information and accept only that which supports one's established conclusions/opinions and to disregard information that is in conflict. Accordingly, any objective report must thoroughly address and work through all contrary arguments in order to guard against these natural biases that will otherwise naturally occur.</p> <p>Sneath, Public Citizen</p> | <p>The USP synthesizes the entirety of the peer-reviewed results.</p> <p>Noted.</p> <p>Noted.</p> <p>The report has undergone major revision in response to this and other comments.</p> <p>Thank you for your insightful comment. It is indeed a difficult point to guard against. One way that is done with the USP is to put the USP out for expert and public comment. In response to this and other comments, the revised version of the USP will also go out for expert and public review.</p> |
| | P | Sparks | Gen | | | | <p>My area of expertise is that I am a professional analyst in matters of establishing facts related to complex disputes in the area of construction/engineering/legal disputes. I have a masters degree in business, and a BS in Wildlife Management. I am a tree farmer and an orchardist. I have read thousands of pages on the state of the science supporting GW supposedly caused by anthropogenic CO2 emissions. I am extremely skeptical that manmade CO2 is causing the majority of GW. I think the data NASA is using is corrupted, and their climate models unproven. They have misrepresented the historical climate record and manipulated related statistics. Even if correct, they are spreading unnecessary alarm, as the earth may in fact benefit from such changes. Climate is dynamic and chaotic and presently insufficiently understood to model accurately - garbage in; garbage out. Any policy statement provided by our government should provide a disclaimer indicating that the science is not settled,</p> |

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| | | | | | and mankind's influence is uncertain. Sparks, Construction Claims Analyst | |
| P | Stealey | Gen | | | You have deliberately refused to invite any prominent skeptics of global warming to take part in producing this document. Your only writers are those with a vested interest in your advocacy. Please withdraw this draft, and invite an equal number of AGW/CO2/climate catastrophe skeptics to take part in producing a new draft. This draft is pure propaganda; to call it "science" is mendacious. Stealey, Public Citizen | The USP does not summarize opinion. It synthesizes the peer-reviewed literature. The USP does not summarize opinion. It synthesizes the peer-reviewed literature. |
| P | Stevens | Gen* | | | Attached is my graph of US temperatures from 1880 to present. The numbers are the corrected NASA temperatures. The graph is done per year, not in groups of 5, not smoothed. You should be able to see the weather pattern. You should also be able to see that it was warmer in the 30's than in the 90's and that there has been no warming since 1998. All this means there is no global warming, man made or otherwise. (Note: Graph part of electronic file) Stevens, Public Citizen | The figures on page 33 of the USP show that the warmth in the US in the 1930s was not global. Since then warming has become global. Reliable time series for the US and the globe are shown on page 33. All time series, even those with anthropogenic trends, have natural variability in them. Natural variability does not disprove the physics of global climate change. |
| P | Stouffer | Gen | | | I am concerned that this report is being published before many of the CCSP reports are complete. Should the name be changed to something like "CCSP Interim Report"? The Synthesis Report should be written when the other reports are published. The process seems wrong to me. Stouffer, GFDL/NOAA | The revised version of the USP incorporates the findings of almost all CCSP SAPs as most SAPS are now available for review and are being finalized. |
| P | Stouffer | Gen | | | The early part of the report is written with a tone that suggests it was produced by an advocacy group. The science is very slanted in spots. The balance is very wrong in the summary sections. If I was allowed as in the review of a peer-reviewed paper, I would recommend rejection of the whole report because of the problems in the first 23 pages. The authors should strongly consider a complete rewrite of this section of the report. It will be very difficult to fix the text as it exists. There are many examples of misleading text, particularly in the early summary sections. I gave many examples in my comments below on the first 23 pages. Stouffer, GFDL/NOAA | The document has indeed undergone major revisions that the tone is now more in keeping with a dispassionate scientist tone. |
| P | Stouffer | Gen | | | The words "climate change" seems to have two very different meanings in the report. In places climate change is used to mean a forced response to human activities or natural events (volcanoes/solar). In other places it includes the previous | Thank you for your comment. The document has been revised with this concern in mind, especially in the phrasing of 'climate change impacts.' |

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| | | | | | definition and adds variability. The latter is mainly associated with the impacts sections. There have been very few studies of impacts where variability and forced response are separated. When reading the summaries, this gives the reader a very misleading impression of the science. This problem contributes to the lack of balance outlined in my other general comment. Stouffer, GFDL/NOAA | |
| P | Stouffer | Gen | | | Can all statements in the Synthesis report be referenced back to the main reports with an explicit reference? (CCSP 3.3 section 2 for example... Like the IPCC). I think this would greatly help the reader find more information. It may also help the authors make a stronger connection to the underlying text Stouffer, GFDL/NOAA | The revised version has been much more highly referenced to make the link back to the source of information clearer. |
| P | Stouffer | Gen | | | There is not much discussion of uncertainty in the early pages of the document. What do we know and what do we not know. What are the prospects of figuring out the places where we are uncertain? The lack of uncertainty discussion hurts the credibility of the statements. Stouffer, GFDL/NOAA | Uncertainty is now more explicitly dealt with in the revised report. |
| P | Sumption | Gen* | | | There's no science in this at all! Your so-called "key findings" simply assert that the "science" is settled! What nonsense! You ought to be ASHAMED of yourselves for ripping off the taxpayers! Sumption, Public Citizen | Thank you for your comment. The underlying science that supports the statements in the USP has now been much more heavily referenced to make the relationship between the science and the statements in the USP clearer. |
| P | Sundt | Gen | | | In 2004, the Climate Change Science Program (CCSP) asked the National Academies to analyze past assessments and to advise the CCSP on how it might approach future assessments. In its final report, Analysis of Global Change Assessments: Lessons Learned, the National Research Council identified 11 essential elements of effective assessments: 1. Clear strategic framing of the assessment process, including a well-articulated mandate, realistic goals consistent with the needs of decision makers, and a detailed implementation plan; 2. Adequate funding that is both commensurate with the mandate and effectively managed to ensure an efficient assessment process; 3. A balance between the benefits of a particular assessment and the opportunity costs (e.g., commitments of time and effort) to the scientific community; 4. A timeline consistent with assessment objectives, the state of the underlying knowledge base, the resources available, and the needs of decision makers; | Thank you for your comment. Many of the points made in this comment are beyond the domain of the USP team to respond as they involve the organizations that authorized this report rather than the report itself. |

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| | | | | | | <p>5. Engagement and commitment of interested and affected parties, with a transparent science-policy interface and effective communication throughout the process;</p> <p>6. Strong leadership and an organizational structure in which responsibilities are well articulated;</p> <p>7. Careful design of interdisciplinary efforts to ensure integration, with specific reference to the assessment’s purpose, users needs and available resources;</p> <p>8. Realistic and credible treatment of uncertainties;</p> <p>9. An independent review process monitored by a balanced panel of review editors;</p> <p>10. Maximizing the benefits of the assessment by developing tools to support use of assessment results in decision-making at differing geographic scales and decision levels; and</p> <p>11. Use of a nested assessment approach, when appropriate, using analysis of largescale trends and identification of priority issues as the context for focused, smaller scale impacts and response assessments at the regional or local level.</p> <p>The NRC concluded that "attention to these elements, many of which have been identified in previous literature, will increase the probability that an assessment will be credible, legitimate, and salient..., and therefore will effectively inform both decision makers and other target audiences."</p> <p>The draft Unified Synthesis Product (USP) has been developed in a process in which the requirement for those elements is not entirely met. This undermines the draft report; and unless the elements are introduced, the final report too will be compromised.</p> <p>These comments focus largely on one of these essential elements, the first and arguably the most important: "Clear strategic framing of the assessment process, including a well-articulated mandate, realistic goals consistent with the needs of decision makers, and a detailed implementation plan." The NRC very specifically recommends:</p> <p>"The leadership of and those requesting assessments should develop a guidance document that provides a clear strategic framework, including a well-articulated mandate and a detailed implementation plan realistically linked to budgetary requirements. The guidance document should specify decisions the assessment</p> | <p>Noted.</p> <p>Noted.</p> <p>The goals of this report are described in the About this Report section.</p> <p>See response at the top of this comment.</p> |

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| | | | | | | <p>intends to inform; the assessment’s scope, timing, priorities, target audiences, leadership, communication strategy, funding, and the degree of interdisciplinary integration; and measures of success."</p> <p>There is no such publicly available document for the USP, leaving unanswered major questions about why the assessment is being conducted, its relationship to section 106 of the Global Change Research Act, the approval process, citation policies, its timeline and other issues.</p> <p>The charter of the CCSP Development Committee (http://www.climate.noaa.gov/ccsp/pdf/usp_draft_charter.pdf) refers to the report as a “Synthesis and Assessment Product.” Furthermore, the solicitation for public comments (http://www.climatescience.gov/Library/sap/usp/public-review-draft/invitation.php) also refers to it as a "Synthesis and Assessment Product" (SAP) and states that "comments received during the current 28-day public comment period will be taken into consideration by the Lead Authors in the preparation of a second draft, as required by the Guidelines for Producing CCSP Synthesis and Assessment Products."</p> <p>These statements leave the impression that the SAP Guidelines are being applied to the USP. This, however, clearly is not the case. The guidelines include several key requirements that have not been met by the USP process:</p> <ul style="list-style-type: none"> • The development of a prospectus, including a public review period for the prospectus itself. The USP has no prospectus. The prospectus is supposed to include the following: <ul style="list-style-type: none"> ○ Overview: description of topic, audience, intended use, questions to be addressed, etc. ○ Contact information: email and telephone for responsible individuals at the lead and supporting agencies ○ Lead authors: required expertise of lead authors and biographical information for proposed lead authors ○ Stakeholder interactions: process already used to solicit input from users and other stakeholders, or proposed plans for doing so, including information for those interested in participating in this process ○ Drafting: materials to be used in preparing the product | <p>See above.</p> <p>Noted.</p> <p>The USP is complying with all relevant rules and regulations.</p> |

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| | | | | | | <ul style="list-style-type: none"> ○ Review: the processes through which the product will receive expert peer review and public comment, including the process for selecting expert reviewers and the scheduled dates for the expert peer review and public comment periods ○ Related activities: description of how preparation of the product will be coordinated with related activities, including other national or international assessment processes (e.g., the Intergovernmental Panel on Climate Change) ○ Communications: proposed method of publication and dissemination of the product ○ Proposed timeline. ● "[S]ignificant additional input from users to develop a clear understanding of information needs, timing of decisions, consideration of how uncertainty affects decision making, and other issues." There was no such significant additional input from prospective users of the USP. ● An "expert peer review" prior to public review "to ensure that the products are shaped by scientific considerations." According to the meeting notes of the second meeting of the CCSP-USP Federal Advisory Committee, the draft USP is being simultaneously reviewed by a "Blue Ribbon panel" and the public -- as well as Federal agencies. This is a substantial compression of the review process required by the SAP guidelines. ● A public comment period of at least 45 days for the draft report. The public has been given only 28 days to review this draft -- a more than 1/3 cut in the review period afforded to other SAPs. ● The use only of "the published, peer-reviewed scientific literature in drafting the products." The guidelines add: "In the rare case that any materials used in preparing a product are not already published in the peer-reviewed literature, the lead agency(ies) must get approval from the CCSP Interagency Committee and these materials must be made available by the lead agency(ies) and/or CCSP Office. The use of any such non-peer-reviewed materials may be questioned by reviewers during the expert | <p>The USP is complying with all relevant rules and regulations.</p> <p>The revised version of the USP will undergo expert review prior to a second public review.</p> <p>The revised version of the USP will undergo a 45-day public review.</p> <p>The information synthesized in the SAPs which have been released for review will be incorporated into the USP.</p> |

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| | | | | | | <p>review or public comment period. Authors should seek to publish any materials used in preparing drafts of the products." Yet the draft USP report specifically indicates on p 15 that the "major sources drawn upon for this synthesis report" include all 21 SAP reports – most of which have not yet been published, and many of which will still not be published if the final Unified Synthesis Product is issued this fall. Nine of the SAPs have not even been submitted in pre-clearance form -- and given the record with previous SAPs, most of those 9 reports will not be published until next year.</p> <p>In addition to not having a detailed and publicly available timeline, the schedule that apparently is being pursued is for some reason rushed. Key steps required of other SAPs and/or recommended by the NRC have been skipped, compressed or combined -- and no compelling justification has been publicly provided. Minimal notice has been provided for meetings of the CCSP-USP Federal Advisory Committee; the public review period was only 28 days; the public review has taken place during the "Blue Ribbon" review -- rather than after it; etc. Though no delivery date has been publicly revealed for the final report, it appears that there is a rush to issue the report in the Fall, perhaps prior to the election. Because of the accelerated schedule, the USP process does not meet the requirements of the fourth element the NRC considers essential to a proper assessment: "A timeline consistent with assessment objectives, the state of the underlying knowledge base, the resources available, and the needs of decision makers."</p> <p>One of the elements of the guidance document recommended by the NRC is a "well-articulated mandate." The charter of the FACA committee at http://www.climate.noaa.gov/ccsp/pdf/usp_draft_charter.pdf says: "The Secretary of Commerce, pursuant to duties imposed by law upon the Department, including the Global Change Research Act of 1990 (Pub. L. No. 101- 606, Section 106), and the Federal Advisory Committee Act (5 U.S.C. App. 2), and with the concurrence of the General Services Administration, hereby establishes the Department of Commerce National Oceanic and Atmospheric Administration (NOAA) Climate Change Science Program (CCSP) Synthesis Product Development Committee (SPDC)." [emphasis added] The charter goes on to say that:</p> | <p>The USP is complying with all relevant rules and regulations. The revised version of the USP will undergo a longer review period.</p> <p>Noted.</p> <p>Noted.</p> |

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| | | | | | <p>“The NOAA SPDC will develop a draft product that will integrate and evaluate the findings of the U.S. Climate Change Science Program in the context of current and projected global climate change trends, both human-induced and natural, and analyze the effects of current and projected climate change on: ecosystems and biological diversity; agriculture; energy production and use; land and water resources; transportation; and human health and social systems.”</p> <p>That language is very similar to that used in Section 106 of the GCRA requiring that the Committee on Environment and Natural Resources (CENR) of the National Science and Technology Council (NSTC) prepare and submit to the President and the Congress "not less frequently than every 4 years" a scientific assessment that:</p> <ol style="list-style-type: none"> 1. integrates, evaluates, and interprets the findings of the Program and discusses the scientific uncertainties associated with such findings; 2. analyzes the effects of global change on the natural environment, agriculture, energy production and use, land and water resources, transportation, human health and welfare, human social systems, and biological diversity; and 3. analyzes current trends in global change, both human- induced and natural, and projects major trends for the subsequent 25 to 100 years. <p>This raises an important question that must be publicly clarified by the CCSP and its governing body, the Subcommittee on Global Change Research (of the CENR): Is the USP intended to satisfy the requirement under Section 106 of the Global Change Research Act for a scientific assessment at least every 4 years?</p> <p>To summarize, the process through which this report is being produced lacks the elements identified by the NRC as essential to a proper assessment. These elements must be introduced and integrated into the process if the final assessment is to be (in the NRC's words) "credible, legitimate, and salient" and if it is to "effectively inform both decision makers and other target audiences." In particular a guidance document -- including a timeline -- must be developed and applied to further work on the report. Finally, the relationship of the report to Section 106 of the GCRA must be explicitly and publicly clarified.</p> <p>WWF, Sundt</p> | <p>Noted.</p> <p>Noted.</p> <p>The USP is complying with all relevant rules and regulations.</p> <p>The USP is complying with all relevant rules and regulations.</p> |
| P | Tateman | Gen* | | | <p>I just do not know where to start, I went to pages 17-19 for Global Impacts and expected to see some rational data with explanatory notes. Instead I find a bunch of political baloney with absolutely NO basis in fact. The so called "hockey</p> | <p>The revised version of the USP has much increased use of referencing to clearly show the sources of the data used in the figures. These sources are peer-reviewed and have undergone</p> |

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| | | | | | <p>stick" representation of CO2 and temperature have been completely falsified in the truly reviewed literature. None of what is written is valid science, go look at your own datasets, I do and they clearly do not reflect the trends espoused. In this day of instant information exchange I am astonished at the ignorance that this document exhibits. I would be ashamed to have my name on it, and my Professors would have literally thrown back at me to do over properly. I would expect more from my government than this wholly refuted nonsense. Do it again, only use real science this time and remember your are being graded!</p> <p>Conclusion: There is nothing to support any of the allegations that humankind has a significant deleterious effect on our global climate. There is no question that we can and do change our environment, by how we treat the land and pollute the water, stink up the air and generally make a mess of things. But change the Weather? Not Possible, let alone change the Climate! The Agenda this document supports is nonsensical, ill-advised and will kill millions of people, maybe that is its purpose. But you FAILED to convince me of anything except perhaps your lack of a prudent work ethic. Good luck at getting a job, you FAILED this test. Fortunately there are many real scientists doing very good work on these questions and the truth will set us all free.</p> <p>Tateman, Public Citizen</p> | <p>rigorous quality control and evaluation to insure their fidelity. The hockey stick figure has been replaced with a new figure from peer-reviewed paper released this summer which includes time series from multiple reconstructions.</p> <p>The USP synthesizes the entirety of the peer-reviewed scientific literature with special emphasis on the results of the CCSP SAPS. The statements by this reviewer are not supported by the peer-reviewed science.</p> |
| P | Tisdale | Gen* | | | <p>The entire report is flawed because it assumes climate change is the product solely of anthropogenic climate forcings. It fails to acknowledge or reflect the impacts of natural variables, including but not limited to:</p> <ul style="list-style-type: none"> - Total solar irradiance; - Atlantic Multidecadal Oscillation; - Short-term, long-term, and cumulative effects of El Nino-Southern Oscillation; and - North Pacific Residual, which is a thermohaline circulation/meridional overturning circulation phenomenon similar in magnitude to the Atlantic Multidecadal Oscillation. It is not the Pacific Decadal Oscillation. <p>Without considering these natural causes and truthfully documenting their contribution, your report has no basis in science fact.</p> <p>Tisdale, Private Citizen</p> | <p>The focus of the report is on long-term climate change rather than variability due to oscillations. Peer-reviewed research show that this has been due to anthropogenic influences. Solar irradiance changes are well documented and as shown I the USP would actually be causing cooling in recent years rather than warming.</p> <p>Natural causes are full considered and detection-attribution studies indicate they have not caused recent changes.</p> |
| P | URS | Gen | | | <p>General comment: The organization and fluid and sequential layout in the draft report contributed to the ease of reading. The layout allowed for an easier</p> | <p>Thank you for your comment. The revised version has quite a different layout but will hopefully still be easy to read. It will also</p> |

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| | | | | | <p>approach to addressing specific sections for comment. However it would have been easier, for review purposes only, to have had a lined format for quick reference for suggested changes for those collating these comments.</p> <p>General Comment: This report lacks a discussion about Federal emergency initiatives underway since 1968 through the Federal Emergency Management Agency's (FEMA's) National Flood Insurance Program (NFIP) and emergency management efforts through the Stafford Act. Both of these programs have funded mandates and mitigation grant programs that address many of the impacts of climate change mentioned in this report, such as flooding; sea level rise and coastal inundation; the need for better building standards and building locations; heavy downpours; hurricane intensity and frequency; cold season storms; and greater wind speeds, rain fall rates, and storm surge levels. The Stafford Act in particular mandates that both States and local communities complete all-hazards mitigation plans that integrate potential and past hazards that may impact their communities, and address those hazards through mitigation actions including zoning, building standards, and other means to reduce the damages caused by storm events. In the event that these plans are not completed, public disaster monies will not be awarded to those communities and States that do not have a FEMA-approved hazard mitigation plan.</p> <p>URS</p> | <p>have line numbers.</p> <p>Thank you for your comment. We reference the work of FEMA in floodplain management in the Society section of the revised document.</p> |
| P | URS | Gen | | | <p>perhaps use the term "waterway" instead of stream. Not all areas in the United States have streams or use that term (ex. arroyos, rivers, etc.)</p> <p>URS</p> | <p>Excellent suggestion, thank you.</p> |
| P | Westerhouse | Gen* | | | <p>I am concerned about the contents on this report and the conclusions it draws concerning global climate, the effects of human behavior, and the report's suggested responses. In general, the report is written with an alarmist tone that interprets most possible future climate events as catastrophes, and reads as if written by author (s) with little or no broader perspective on the issues at hand and the science that these issues are based on. I am not offering detailed line-by-line comments (the result would be much too large to be useful), but I am hopeful that the next draft of this report would have context added, so that a balanced view of our climate and our impact on it is presented.</p> <p>Mankind has an enormous ability, through innovation and technology, to react to changes in our natural and man-made environment, and even the worst-case outcomes of the IPCC assessments would not result in the outrageous results suggested in this report. The negative consequences on today's World, especially</p> | <p>The revised draft has a more dispassionate scientist tone.</p> <p>The report is based on peer-reviewed research and is a synthesis of these findings.</p> |


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| | | | | | <p>third-tier nations, of acting on these overstated concerns would greatly outweigh the negative consequences that might result from a 1 or 2 degree rise in the Earth's temperature (which is unlikely anyway and mostly beyond anything man can influence).</p> <p>Alarmist assessments like this one distract the attention of leaders in the US and the rest of the developed World from the real and present problems that are a higher priority for funding and cooperation. Technology and development are inherently better ways to solve problems around us than programs managed by the federal government or world bodies.</p> <p>Westerhouse, Public Citizen</p> | <p>Policy prescriptions are not offered in the USP nor are comparisons offered between the impacts of climate change and other real and present problems.</p> |
| P | White | Gen* | | | <p>I feel that there is much we still do not understand about climate change and human impact upon same. In that regard:</p> <p>More research needs to be done on what drives climate change (both natural and human causes) before this information is presented as fact to the public.</p> <p>The satellite record is rather short in respect to the multi-decadal natural climate cycles that warm and cool our global climate. A larger body of data over a longer timespan will help clarify the general trends of our climate.</p> <p>White, Public Citizen</p> | <p>The uncertainties are now more precisely described.</p> <p>Research needs to close the gaps in our understanding are described at the end of the report.</p> <p>More will be known in 100 years. But the satellite data record currently shows warming as well as the surface data.</p> |
| P | Williams | Gen | | | <p>Many of the impacts discussed will happen regardless of the cause for global warming. The negative impacts presented are not balanced by the positive impacts. I do believe they should be included to balance the report.</p> <p>Most human-caused climate change is local. The report does not make the case for green house gas emissions being the cause of the recent warming period.</p> <p>The report on page 21 admits models use to “project” impacts do not match observed data. That leads to the question of what else is wrong with the models. The fact that they had to be tweaked to match recent observed data is very troubling and reason to doubt all “projections.”</p> <p>The natural occurring ice ages, Medieval Warm Period, Little Ice Age, have not been explained by the models or studies as to their cause. The fact that a good portion of the North American continent was covered with ice then it melted is very strong evidence that the current warming is natural.</p> | <p>SAP 3.3 states that because natural and human systems are adapted to the historical climate, any change in climate will tend to produce more negative than positive impacts.</p> <p>The science is being restated to explain this more clearly.</p> <p>Model reliability is now clearly addressed.</p> <p>Climate changes all have causes. Ice ages are initiated by orbital changes in the earth. Changes in solar energy have also caused some</p> |

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| | | | | | <p>From my own experience I believe some of the claims are wrong or over stated.</p> <p>I do not recommend this report be published in its present form without serious revision</p> <p>Williams, Public Citizen</p> | <p>climate change in the past. But the present climate change can be directly attributed to human induced changes in the atmosphere.</p> <p>The claims are based on peer-reviewed research findings.</p> <p>Thank you for your comment.</p> |
| P | Wojick | Gen | | | <p>The logical structure of this USP is that of an advocacy document, not an objective assessment. The document is a lengthy argument for the theory of human induced (anthropogenic) climate change, or AGW. The skeptical scientific arguments against AGW are not explicitly presented, even though they are well known to the government. This serious lack of balance needs to be redressed.</p> <p>Wojick, ClimateChangeDebate.org</p> | <p>The format of the USP has been changed. It still synthesizes the results of peer-reviewed research. The many skeptical arguments that have never been discussed in peer-reviewed literature, disproven in peer-reviewed literature or dismissed by other synthesis reports such as IPCC because of problems in them are not addressed by the USP.</p> |
| P | Wojick | Gen | | | <p>This USP document is being prepared in the context of a federal rulemaking, specifically the possible regulation of GHGs. As such it fails to meet the legal requirements for an objective scientific assessment. Instead, it is clearly an advocacy document, with clear implications for regulatory policy. This document claims, contrary to fact, that it is known that future GHG emissions will cause adverse and dangerous climate change. This is a matter of scientific controversy and speculation, not a matter of known fact. The document should be rewritten to reflect this well known uncertainty.</p> <p>Wojick, ClimateChangeDebate.org</p> | <p>The goals of the USP are stated in the About this Report section. The USP is complying with all relevant rules and regulations. The USP synthesizes the results of reproducible tests documented in the peer-reviewed literature.</p> |
| P | Wojick | Gen | | | <p>The logical device of first considering past climate, then future climate and impacts, throughout this USP document, is highly misleading. It repeatedly links past changes in climate parameters to purported future changes and adverse impacts thereof. The clear, and false, implication is that dangerous climate change due to human activity has begun and will get worse. None of this is known to be true at this time. Rather, these implicit claims are a matter of serious scientific controversy and speculation. The fact that these claims are backed by advocacy groups like the IPCC, which is cited repeatedly, does not change the fact that the science is controversial at this time. The controversial nature of these theories needs to be made explicit throughout the document.</p> <p>Wojick, ClimateChangeDebate.org</p> | <p>The USP synthesizes the results of reproducible tests documented in the peer-reviewed literature.</p> <p>The IPCC is not an advocacy group. The IPCC synthesized a great deal of peer-reviewed literature to produce a report based on the very best scientific evidence.</p> |
| P | Michaels | 0 | | | <p>Title Page</p> <p>I start my specific review on the third (un-numbered) title page, with the following naïve question: What the heck is this picture supposed to connote about climate</p> | <p>Thank you for your recommendation. The picture has been removed.</p> |

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| | | | | | | <p>change? It appears to be an image showing that people of both sexes and as many races as can be represented are capable of holding hands. If you wanted to set a tone—that this is a political polemic—you couldn’t have picked a better front image. The fact that no one involved apparently even questioned the use of this image (enough to have it removed) says very, very much about the FACA author team. Sad to say.</p> <p>Recommendation: Delete the picture and put in something that is at least vaguely related to climate.</p> <p>Michaels , Cato Institute</p> | |
| | P | Webster, R. | 0 | | | <p>Cover Page: The cover is prejudicial to a warming future and simply reflects IPCC conclusions contained in the 2007 Summary Report (which is based on material published prior to 2006). There are four serious deficiencies with this cover page: (1) the chart covers far too little time to be representative of historic climate variability and fails to indicate in any way the portion of recent climate variation due to natural forces (this is an understandable failure since, given the current state of knowledge concerning natural climate variability, distinguishing natural from human-caused climate variability is simply not possible), a deficiency that is particularly critical since the use of compressed scales to measure both temperature and atmospheric CO2 gives a misleading picture of dramatic change where none exists; (2) there is no validated scientific work that has yet been able to distinguish a human component from natural climate variability (as a consequence, the only rational course is to avoid drawing any speculative conclusions regarding the existence of a human component to climate variability from any source that is sufficient to distinguish it from background natural variability); (3) embedded photos are not representative of consequences of climate change (i.e., they represent normal extremes of weather that occur with different frequency that can change with natural climate variations, consequently, using them as an example of threats from human-caused climate change is highly misleading); and, (4) the cover strongly suggests this report is simply a “me too” copy of the 2007 IPCC Summary Report which has suffered considerable criticism for it’s failure to include emergent timely material (both observational and from investigative research) since 2005 that contradict its assumptions, consequences, and conclusions.</p> <p>If this report is to be taken seriously, then all prejudicial images, including the graph, must be removed in favor of a neutral cover more consistent with a serious science-</p> | <p>Thank you. The front cover has been redesigned to include images related to the different sectors and themes discussed in the report. We have kept the chart as it encapsulates key information discussed in the early part of the report.</p> |


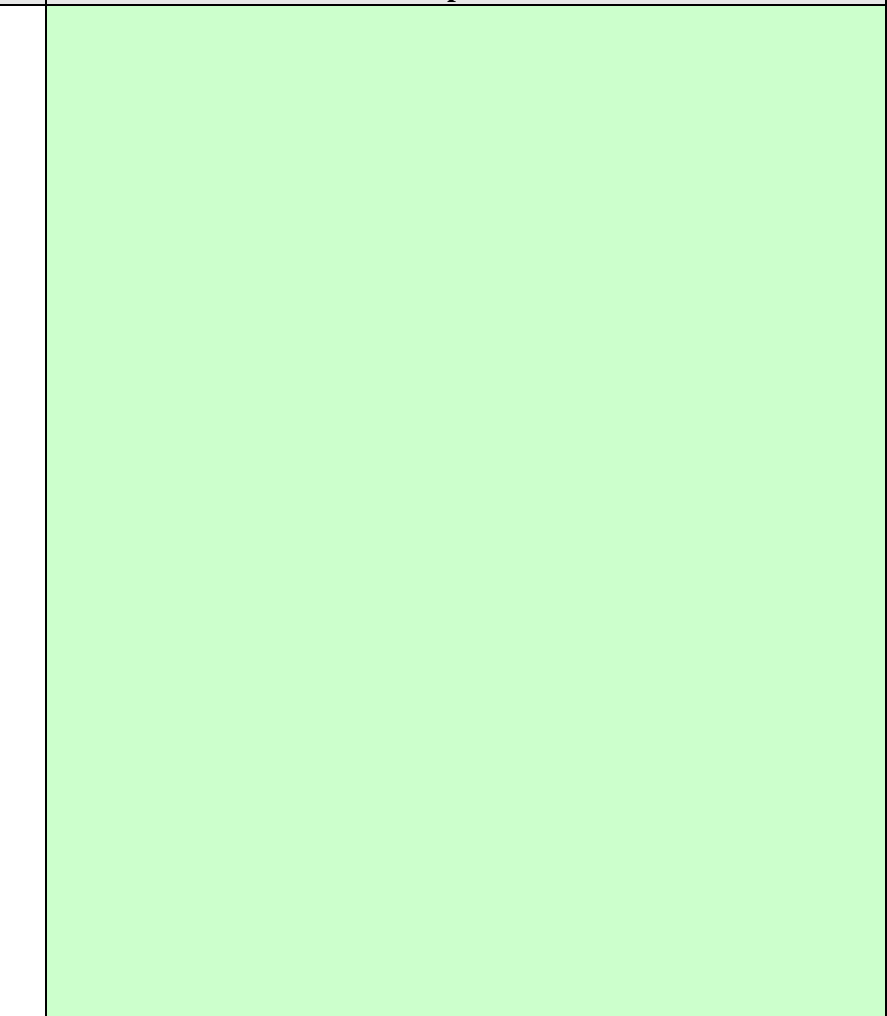
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| | | | | | based report. In its current state, the draft report cover represents a hypothetical position and creates a false image of the complete state of scientific research and observational evidence. The risk of including this cover “as is” is that it projects a biased frame of reference to the astute reader, a position that cannot currently be sustained using either validated scientific research or real world observations. -- Webster, (Retired DA/DoD) | |
| P | Pollock | 1 | 1 | | While it is abundantly clear that the climate varies naturally, it is by no means proven that our recent warming, if any, was significantly “human-induced,” nor that our apparent current natural cooling will soon end. “Human-induced climate change” is a scam which has generated mass hysteria (as well as large profits for the scammers, “scientific” and otherwise). Pollock (Private Citizen) | Thank you. Please see IPCC WG I section 1.2 which indicates that what is driving that report are the results of reproducible peer-reviewed research. |
| P | Haskett | 3 | | 15 | A comparison of actual temperatures to the predictions made by James Hansen in 1988 before congress, indicate that global temperatures are running below the projection for the temperature case given strong international CO2 abatement programs. Given that, the language should probably read, "Many climatic changes are occurring much slower than projected even a few years ago." Haskett, Public Citizen | Thank you. This report reflects the findings of the peer-reviewed literature. |
| P | Goklany | 4 | | | The Executive Summary (ES) is anything but a dispassionate summary of what is scientifically known and what is uncertain. <ul style="list-style-type: none"> ▪ There is nothing on pp. 4-5 that gives us a notion as to (a) the timing of the temperature indicated on the roadway, (b) the uncertainties linked with the combination of the magnitude and timing of the temperature changes, (c) whether the temperature changes refer to average US including Alaska, just the 48-contiguous states, Northern Hemisphere or global temperatures. ▪ The reason why timing should be provided is because, as page 5 of the ES notes, rates of change are important. In some instances they may be more important than the absolute amount of change, and, although the ES doesn't note it, limits to adaptation in general should be a function of the rate of change. Therefore it is important to know whether the impacts and the temperature changes indicated on the roadway will happen in decades or centuries, and what are the likelihoods associated with those changes. This is just one example of the lack of scientific rigor within the Executive Summary. ▪ It takes readers some time to recognize that the color of the road is related to | Thank you. The Executive Summary has undergone major revision. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |

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| | | | | | | <p>temperature. One has to get to the bottom of page 5 to figure this out. Moreover, I suspect that it should be temperature change rather than temperature.</p> <ul style="list-style-type: none"> ▪ In English, the language of the ES, one starts reading at the top left and then proceeds to the bottom right. Accordingly, I recommend that the start of the roadway (where we are right now) should be at the top left of page 4 rather than the bottom right of page 5, where it is currently located. <p>There is nothing in the body of this report that can be used to argue for emission reductions because there is no analysis of mitigation, and how the costs and benefits of mitigation compare with either adaptation and/or “no action”. It’s insufficient to claim that there are “limits to adaptation” (page 5), one must show that adaptation will most likely be insufficient or it might be too costly. One also has to show that mitigation would reduce damages more economically than adaptation, and less costly than living with the damages (e.g., abandoning properties on the coastal margins) (see Goklany 2007a). I recognize that most people — myself included — believe that some mitigation should play a role as part of an effective and economically efficient response to climate change, but unless it’s backed up by any real analysis that’s a belief and not necessarily based on science, which is what this document purports to be about. Since no such analysis has been furnished in this report, there is no basis in this document for language such as:</p> <ul style="list-style-type: none"> (a) “Will we begin reducing heat trapping emissions now, thereby reducing future climate disruption and its impacts?” (page 4). Besides the fact that there is no analysis or specified rationale for the specific statement, this is not a scientific issue. It has no place in this document. (b) “There is a growing urgency in responding to the climate challenge because choices being made now have long-term implications, and delay will be costly. Aggressive near-term actions would be required to alter the future path of human-induced warming and its impacts. Future generations will inherit the legacy of our decisions” (page 4). What are the bases for these statements? Where is the analysis to back the claim of urgency? Urgent, compared to what? Urgent, for the US or from a global perspective? The notion of something being urgent implies that it’s more important than other problems. Where is the analysis to back the claim of urgency? “Urgent,” compared to what? “Urgent,” for the US or the global perspective? The notion of something being urgent implies that | |

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|  | | | | | | <p>it's more important than other problems. Where is the analysis that shows that climate change is more important globally, for instance, than reducing hunger or malaria, or increasing access to clean water, etc., or that it is best to expend resources on climate change mitigation rather than dealing with other problems? In fact, the only comparative analyses of climate change versus other issues conclude that while climate change is important, other problems are more urgent, that society's resources may be better used dealing with those other problems, and that for the next several decades it is more cost-beneficial to expend resources on adaptation than mitigation (Lomborg 2004; Goklany 2000, 2003, 2005, 2007b).</p> <p>I recommend excising both these statements. Alternatively, there should be a broader discussion of whether and why climate change is (or isn't) urgent, and whether and why slowing it is the best use of society's resources from either the US or the global perspective (see Lomborg 2004; Goklany 2000, 2003, 2005, 2008).</p> <p>References Goklany, I.M. 2000. "Potential consequences of increasing atmospheric CO2 concentration compared to other environmental problems." <i>Technology</i>, 7S, 189-213. Goklany, I.M. 2003. "Relative Contributions of Global Warming to Various Climate Sensitive Risks, and Their Implications for Adaptation and Mitigation," <i>Energy & Environment</i> 14: 797-822. Goklany, I.M. 2005. "A climate policy for the short and medium term: stabilization or adaptation?" <i>Energy & Environment</i> 16: 667-680. Goklany, I.M. 2007a. "Integrated strategies to reduce vulnerability and advance adaptation, mitigation, and sustainable development," <i>Mitigation and Adaptation Strategies for Global Change</i>, DOI 10.1007/s11027-007-9098-1. Goklany, I.M. 2007b. "Is a Richer-but-warmer World Better than Poorer-but-cooler Worlds?" <i>Energy & Environment</i> 18: 1023-1048. Goklany, I.M. 2008. "Adaptive Management of Climate Change Risks," forthcoming in <i>A Breath of Fresh Air</i>. Toronto: The Fraser Institute. Preprint available at http://www.fraserinstitute.org/commerce.web/product_files/AdaptiveManagementClimateChange.pdf Lomborg, B. 2004. <i>Global Crises, Global Solutions</i>. Cambridge: Cambridge University Press.</p> | <p style="background-color: #e0ffe0; padding: 5px;">Responses</p> |
| | P | Goklany | 4 | | | <p>General Considering the problems associated with the surface sites (noted above), it's not clear how the models used for developing climatic changes for the US and its subregions were calibrated, verified and/or validated to accurately reproduce past</p> | |

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| | | | | | <p>temperature changes and, therefore, future projections as well. The document should address this. Failing that, it should address why the projections of climate change reported here should be taken seriously.</p> <p>8. Executive Summary, all pages. There is a tendency in this document to treat recent trends as harbingers of future long term trends. For example, Key Finding 4 states that “Atlantic hurricane intensity has increased in recent decades...” Evidence suggesting increases in the intensity of hurricanes in recent decades might be due to climatic change is very weak and a number of papers that have appeared since the IPCC’s fourth assessment was drafted would suggest otherwise. Moreover, data going back to 1970 or so are too short to be used to make definitive statements about whether changes in intensity are due to climatic trends, short term natural variability, improvement in detection technologies with finer spatial and temporal resolution, or a combination of all these factors. In the long term context, it’s not clear whether these changes, if any, are outside the bounds of natural variability (see references below). See, also, Comment 5.</p> <p>References Briggs, W.M. 2008. On the changes in the number and intensity of North Atlantic tropical cyclones. <i>Journal of Climate</i>, 21, 1387-1402. Donnelly, J.P., & Woodruff, J.D. 2007. Intense hurricane activity over the past 5,000 years controlled by El Nino and the West African monsoon. <i>Nature</i> 447: 465-468. Keim, B.D., Muller, R.A. and G.W. Stone, 2007: Spatiotemporal patterns and return periods of tropical storm and hurricane strikes from Texas to Maine. <i>Journal of Climate</i>, 20, doi:10.1175/JCL14187.1. Nyberg, J., B.A. Malmgren, A.Winter, M.R. Jury, K.H. Kilbourne, and T.M. Quinn. 2007. Low Atlantic hurricane activity in the 1970s and 1980s compared to the past 270 years. <i>Nature</i>, 447, 698-702. Parisi, F. and R. Lund. 2008. Return periods of continental U.S. hurricanes. <i>Journal of Climate</i>, 18, 403-410. Virmani, J.I., and R.H. Weisberg, 2006: The 2005 hurricane season: An echo of the past or a harbinger of the future? <i>Geophysical Research Letters</i>, 33, L16705, doi:10.1029/2006GL026869. Wang, C., and S.-K. Lee (2008), Global warming and United States landfalling hurricanes, <i>Geophysical Research Letters</i>, 35, L02708, doi:10.1029/2007GL032396.</p> <p>Goklany</p> | <p>There is a large body of literature indicating that homogeneity adjustments are robust and can be used to account for a wide variety of changes in the observing system.</p> <p>The Executive Summary has undergone major revision. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |
| P | Goklany | 4 | | | <p>Considering that the characterization of “likely” and “very likely” used in this report are not standard, these terms should be defined up front so that the reader who skims the Executive Summary understands what these terms do and don’t signify rather than have to wait till page 15 to figure out what these terms signified.</p> | <p>Thank you. Likelihood is now clearly defined in the About this Report section.</p> |

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| | | | | | | <p>Importantly, since it is not standard, readers should be cautioned that that the terms “likely” and “very likely” have nothing to do with terms such as “statistically significant” that many may vaguely recall from their old college days as being a (relatively) high hurdle, which by informal convention was for decades set at 95% or 97.5%. In fact, without specific language explicitly noting this, many lay readers are likely to be misled (at the 66% level!) that there is a relationship between these terms. And one of the functions of writing a scientific report is to reduce the likelihood of being misunderstood. Accordingly, the following language, modified from page 15, should be introduced on the first page of the Executive Summary:</p> <p>“With regard to expressing the range of possible outcomes and identifying the likelihood of particular impacts, this report takes a plain language approach to expressing the expert judgment of the author team based on the best available evidence. For example, an outcome termed “likely” has at least a two-thirds chance of occurring; something termed “very likely,” at least a 90 percent chance. NOTE THAT THESE TERMS ARE NOT IDENTICAL TO BEING CONSIDERED AS “STATISTICALLY SIGNIFICANT”, WHICH BY CONVENTION IS BASED UPON A LIKELIHOOD OF 95-97.5%. In using these terms, the team has taken into consideration a wide range of information including the strength and consistency of the observed evidence, the range and consistency of model projections, the reliability of particular models as tested by various methods, and so on. Statements that are not qualified with such terms are deemed virtually certain.”</p> <p>Goklany</p> | |
| | P | Hall | 4 | | | <p>(Note : Putting together so you can deal with it all at once)</p> <p>Replace with the following:</p> <p>The Future is in Our Hands Human-induced climate change is negligible. The moderate warming trend of the 20th century is well within historical variation. However, the human race is seriously threatened by the perversion of the scientific process by political influence. Its impacts on our economy, security, and quality of life will increase in the decades to come. Beyond the next few decades, when carbonophobia is locked in to the political system by activism to date, the future lies largely</p> | <p>Thank you. This report reflects the findings of the peer-reviewed literature. It has been significantly revised to more clearly document this fact.</p> |

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|  | | | | | | <p>in our hands. Will we begin reducing baseless alarmism now, thereby reducing future hysteria and its impacts? Will we alter our planning and development in ways that reduce our vulnerability to the regulations that are already on the books? The choices are ours.</p> <p>Beneficial and Detrimental Impacts While there have been some benefits in some sectors of society, notably in the prestige and funding of climate scientists and activists, most impacts are projected to be detrimental, in part because society and science have developed and evolved based on honesty and reliability of scientific research and discourse. Impacts are expected to become more detrimental for more people and places with additional distortion.</p> <p>Irreversible Losses Some of the impacts of science perversion will be irreversible, such as Nobel prizes given to charlatans and mountebanks. The increase in wind associated with activism and the increase in heavy regulation are also expected to lead to irreplaceable loss of human effort, both scientific and economic. The growing acceptability of assertions with no falsifiability or reproducibility as "settled science" threatens to throw mankind back into an age of superstition and intolerance of skepticism and criticism not seen since Galileo.</p> <p>Reading the Report As you read this report, compare it with Unstoppable Global Warming: Every 1500 Years, by Singer and Avery; with Shattered Consensus: the True State of Global Warming, ed. by Patrick Michaels; and Cool It - The Skeptical Environmentalist's Guide to Global Warming by Björn Lomborg, among countless other views on the subject. Ask yourself whether it is truly unified; truly a synthesis; truly open-minded; truly scientific; or indeed true at all. Hall, Molecular Engineering Research Institute</p> |  | |
| | P | Houck | 4 | | | <p>Box-Urgency of Action Suggest softening the language that states that "projections for the rest of this century make it clear that rising temperatures will continue to be the norm". Suggest language that it is "likely", not "clear". Houck, P.E., CFM; ASFPM, Colorado Water Conservation Board</p> | | <p>Thank you. Likelihood is now clearly defined in the About this Report section.</p> |
| | P | Keillor | 4 | | 2 | <p>Box-Future is in Our Hands</p> | | <p>Thank you. The Executive Summary has undergone major revision.</p> |

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| | | | | | | <p>The second sentence of this opening paragraph is unclear – what is meant by warming being “locked in”? The future climate seems to be in our hands during the decades until warming is “locked in” and the momentum of rising emissions and greenhouse gases concentrations pushes the atmosphere and oceans past tipping points and thresholds. If the future lies directly in our hands, can we still make changes despite the impacts of climate change (i.e., warming) being “locked in”? When warming becomes “locked in,” does that not imply that the future is therefore out of our hands? Isn’t the point of these various national reports on the impacts of climate change to not only deliver critical information pertaining to the impacts of climate change, but more importantly, to relay that information to the very practitioners that can help implement those changes? To clarify, we suggest changing the wording of the second sentence to read, “Since past and present emissions will continue to influence climate change for many years, associated impacts on our economy, security, and quality of life will increase in the decades to come.” Additionally, we suggest changing the wording of the third sentence to further clarify this concept to read, “However, the future is largely in our hands beyond the next few decades, during which some measure of warming is irreversible due to human activities to date.”</p> <p>Keillor - ASFPM Member; Medlock, CFM, JD - ASFPM Program Manager; Pogue, CFM - ASFPM Coastal Committee Co-Chair</p> | <p>The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |

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| P | King | 4 | | | <p>(NOTE: Lumping all comments on the Executive Summary, by this gentleman, into one section, so you can quickly deal with it.)</p> <p>The Future is in Our Hands This section assumes global warming is the cause of global warming and that is detrimental. Neither has been proven.</p> <p>Beneficial & Detrimental Impacts Your assumptions are based on computer models that have continually been wrong on regional and global levels for both short and long terms. These models are based on an infinite atmosphere to simplify their calculations among many other issues.</p> <p>Irreversible Losses Again this statement assumes global warming is man's fault, which hasn't been proven. Also, it seems to imply we could never recover from major extractions but we recovered from the mass extinction in our history, such as the dinosaur extinction. Over 95% of life that existed on this planet is now extinct.</p> <p>Urgency of Action Even if we totally met the Kyoto Protocols, it would only mean a cooling of .04 degrees. What you are suggesting here would cause the real damage to both our life styles and our economy as a whole. All this for an unproven theory where over 1/2 of climate scientists disagree with this Theseus.</p> <p>Tipping Point The tipping point theory is the most radical of the worse case results of the most radical climate model. Why not at least mention Ferenc M. Miskolczi (pronounced Ferens MISkolshee), a first-rate Hungarian mathematician, who has published a proof that "greenhouse warming" may be mathematically impossible.</p> <p>Rates of Change Any climate change that has occurred is entirely within the bounds of past history. Only climate models, that have never been accurate predict this rate of change issue.</p> <p>Limits to Adaptation I think its worth spending money on dealing with climate change but to think we can affect the climate in any major way is again not very realistic. However, to deal with natural climate change on our population is a reasonable idea.</p> <p>King, Public Citizen</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |
| P | Lavin | 4 | | | The Future is in Our Hands | Thank you. The Executive Summary has undergone major revision |

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| | | | | | | <p>I was shocked and saddened to see such a statement here. This appears to be the reasoned conclusion of an advertising agency, not a scientific agency.</p> <p>Human induced climate change is always occurring. The forests in colonial times were cut in New England and this changed the micro climate. The forests then grew back when farming ended. The climate changed again. "Climate change" is not climate warming, yet the second sentence says it is. " Will we begin reducing heattrapping emissions now, thereby reducing future climate disruption and its impacts?" which presents the conclusion and the prediction as fact rather than fantasy.</p> <p>A better sentence would be: Will a reduction in heat trapping gases reduce climate change? In fact no one know if this is true. How much heat does gas trap? is it significant? is water vapor included as being a gas? Is it an emission?. Does this sentence mean that the US government is going to regulate my kitchen tea kettle?</p> <p>Furthermore, the document should emphasize USA climate change, not data which is not verifiable from other sources.</p> <p>I would change this paragraph to: The possibility that human induced climate change in the United States is affecting us now is a current scientific controversy. How it might impact our economy, our security and quality of life depends on how we can measure the effects of climate change and how well we understand the virtually infinite number of factors which determine our climate. Although the United States produces methane, water vapor, and co2 from industrial and agricultural sources, the USHCN temperature mapping from 1895 to 2007 show only highly localized areas of statistically significant temperature change over the last 100 years, with portions of the United States being cooler and portions which are mildly warmer. Most of these areas of warming have occurred in areas where there has been 100 fold changes in population growth, for example the US Southwest, between 1895 and 2005. Global warming, according to GISS mapping studies, is not occurring in the United States and appears to be localized in northern central asian and polar regions.</p> | <p>based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |

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| | | | | | DATA for all of these statements available on request Lavin, Public Citizen | |
| P | Lavin | 4 | | | Beneficial & Detrimental Impacts The second paragraph of the executive summary above again presents controversy as fact and is asking to predict the future based on a foregone conclusion. This is bizarre to say the least. Are we talking about climate change, or are we talking about changes in temperature in the United States which is both heating and cooling. Since most of the land mass of the United states is not any warmer than it was in 1895, why is an emphasis put on effects due to additional warming? Lavin, Public Citizen | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Lavin | 4 | | | Irreversible Losses This might occur in a mythological future, but is it happening now? Storms are not more fierce, there are not more hurricanes, there are not more droughts, and the sea level sure isn't changing much, and has changed in the past. Why should the government be concerned with things that might exist in the future?. The weather might just as well be more pleasant and without more erosion and heavy downpours - who is to say, and can they prove it? Does the US climate change program actually believe that it is powerful enough to change the climate and alter future weather? Lavin, Public Citizen | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Michaels | 4 | | | Box-Beneficial & Detrimental Impacts Let's start with "society". I presume that this means "people". They live and prosper roughly from a range of temperature from -40° to +40°C. Apparently the authors believe in "climatic determinism", the long-discarded notion that climate is responsible for the success or the failure of various cultures with regard to one another. Changing the mean temperature, say, 3°C within that range lies well within the adaptive range of almost every society on earth. Even the Inuit occupy a range of about 12°. Farmers in Virginia achieve the same yield of corn in the relatively cool, dry Shenandoah Valley that they reap in the hot and muggy Tidewater. Worldwide, cities have warmed extensively. Tokyo's heat island, a rise of approximately 3°C in the last 100 years, has no demonstrable net negative effect on its urban society. Instead, millions of people with many different subcultures simultaneously adapted to a temperature change that some would estimate would occur as a global average in this century. Let's just say that the CCSP cannot | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |


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| | | | | | <p>demonstrate a net negative effect on society and leave it at that. No, let’s not: CCSP is guilty here of what Paul Waggoner called the “stupid people hypothesis”, as gratuitous a swipe as can be made—especially in light of the strange picture of people of all cultures working so together on the third un-numbered title page referred to above.</p> <p>The Tokyo heat island indeed has had some ecological effects. Vegetation that would normally be restricted to locations further to the south can now survive there. Indeed, there is another problem that CCSP clearly ignores with its statement: microclimates. The variegated surface of earth provides for considerable climatic variation within a larger geography. Models of extinction of species that “evolved based upon historical climate” completely neglect the fact that microclimatic refugia are likely to preserve many species, despite their larger “historical climate”. I offer the CCSP the stand of Abies balsamea growing in northeast Iowa, far away from the “historical climate” of the boreal forest. According to every climate/extinction model, it should not be there.</p> <p>Recommendation: Delete the statement about historical climate. As it now stands, the statement fails to meet the authors’ claim of representing the “the best available science” (p. 14) and otherwise violates applicable objectivity requirements. Michaels , Cato Institute</p> | |
| P | National Wildlife Federation | 4 | | | <p>Box-Beneficial and Detrimental Impacts I think it would be best to head that box with something like “Significant Impacts” – what is considered “beneficial” and “detrimental” is subjective. National Wildlife Federation</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Pogue | 4 | | | <p>Box-Beneficial and Detrimental Impacts There is reference made to “some benefits in some sectors of society in the early stages of warming.” This appears to be in direct conflict with earlier reports (National Water Program Strategy: Response to Climate Change: Office of Water, U.S. Environmental Protection Agency, March 2008). This should include a brief example as was used for the detrimental impacts. It would be valuable to see the change from the beneficial to the detrimental. Specifically, specify to what sectors of society these impacts would be beneficial, and why. Pogue, CFM - ASFPM Coastal Committee Co-Chair</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Pogue | 4 | | | Box-Irreversible Losses | Thank you. The Executive Summary has undergone major revision |

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| | | | | | Add to the list: loss and damage of aging infrastructure located close to the shoreline (coastal highways linking east and west coasts in Hawaii, for example); land inundated by rising sea levels; and structures, water, and sewage facilities inundated by increased coastal and riverine flooding. Change “soil losses from downpours” to “soil losses from heavy precipitation (or downpours) are resulting in flashfloods, increases in rainfall runoff, and floods.” Pogue, CFM - ASFPM Coastal Committee Co-Chair | based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Pogue | 4 | | | Box-Urgency of Action This report does a fine job of describing short-term versus long-term actions that can be taken, and the results. It also explains that the science is not available to adequately quantify the timing and scope of what these impacts may be. This is a solid point but how will urgency affect the impacts of climate change? Pogue, CFM - ASFPM Coastal Committee Co-Chair | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Stouffer | 4 | | | Future is in our hands – (warming is “locked in” to the climate system from human activities to date – Change to “when much of the warming is caused by past human activities”. There are many problems with the original text. What is meant by “locked in” is not defined. The time scale is missing. The tone is wrong. Stouffer, GFDL/NOAA | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Stouffer | 4 | | | Beneficial & Detrimental Impacts (developed and evolved – Could add “adapted” to the list. Stouffer, GFDL/NOAA | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Stouffer | 4 | | | Irreversible Losses (species extinctions and civilizations on islands – Delete “civilizations on”. More than just the people suffer harm. Also the tone is wrong. Stouffer, GFDL/NOAA | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Stouffer | 4 | | | Urgency of Action Is this part of the CCSP assessment? What CCSP report says this? Stouffer, GFDL/NOAA | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | URS | 4 | | | Box-Future in our Hands The second sentence in this opening paragraph is unclear—what is meant by warming being “locked in”? If the future lies directly in our hands, can we still make changes despite the impacts of climate change (i.e., warming) being “locked in”? When warming becomes “locked in,” does that not imply that the future is therefore out of our hands? Isn’t the point of these various national reports on the impacts of climate change to not only deliver critical information | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |

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| | | | | | <p>pertaining to the impacts of climate change, but more importantly, to relay that information to the very practitioners that can help implement those changes?</p> <p>URS</p> | |
| P | URS | 4 | | | <p>Box-Beneficial and Detrimental</p> <p>there is reference made to “some benefits in some sectors of society in the early stages of warming.” This appears to be in direct conflict with earlier reports (National Water Program Strategy: Response to Climate Change: Office of Water, U.S. Environmental Protection Agency, March 2008). This should include a brief example as was used for the detrimental impacts. It would be valuable to see the change from the beneficial to the detrimental. Specifically, specify to what sectors of society these impacts would be beneficial, and why.</p> <p>URS</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |
| P | URS | 4 | | | <p>Box: Irreversible Losses</p> <p>add to the list: loss and damage of aging infrastructure located close to the shoreline (coastal highways linking east and west coasts in Hawaii, for example); land inundated by rising sea levels; and structures, water, and sewage facilities inundated by increased coastal and riverine flooding. Change “soil losses from downpours” to “soil losses from heavy precipitation (or downpours) are resulting in flashfloods, increases in rainfall runoff, and floods.”</p> <p>URS</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |
| P | URS | 4 | | | <p>Box: Urgency of Action</p> <p>This report does a fine job of describing short-term versus long-term actions that can be taken, and the results. It also explains that the science is not available to adequately quantify the timing and scope of what these impacts may be. This is a solid point but how will urgency affect the impacts of climate change?</p> <p>URS</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |
| P | Webster, R. | 4 | | | <p>Box: Future in our Hands</p> <p>The entire paragraph, including the heading, is both hypothetical and prejudicial. There really is no validated scientific evidence, either observational or objective research, to support the assumptions of this paragraph. Recommend new paragraph heading, “The Future” and replacing the current paragraph with: “Natural climate change is the normal condition of Earth’s atmosphere. Its potential impacts on our economy, security, and quality of life should be carefully investigated and preparations made to minimize adverse impacts from realistic threats. Climate inevitably warms and cools as the long history of climate variability reveals.” As is, the portions of the paragraph that presume (1) a significant human component to</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |

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| | | | | | | <p>climate change, and, (2) a significant role for greenhouse emissions in climate change, are both hypothetical and unsupported by adequate validated scientific evidence. There is an important distinction between greenhouse gas heat-trapping that contributes to Earth’s complex temperature moderating processes and greenhouse gas heat-trapping above and beyond temperature moderating processes that is sufficient to lead to significant climate change. There is no conclusive evidence that greenhouse gas heat retention has ever been a significant driver of climate change throughout Earth’s climate history.</p> <p>In order to focus on the heat-trapping characteristics of “greenhouse gases” (a misnomer since Earth’s atmosphere does not trap heat the same way a greenhouse does), it must a priori be established that heat-trapping characteristics of greenhouse gases are sufficient to become a significant climate change force above and beyond Earth’s underlying natural climate variations over any significant period of time. That has not been done. It has simply been assumed based on certain assumptions about the nature of greenhouse gases and their relation to climate change. Natural forces that do alter climate have not been adequately identified and investigated. Not a single validated scientific study has identified a human-caused element of significant climate variability over any time period without relying on speculation and assumptions that essentially guarantee such a conclusion. That is not science, it is circular reasoning. The proposition that human activity is significantly changing climate remains hypothetical — a mere theory unsupported by either rigorous scientific evidence or real world observations! Indeed, observations confirm that the trend of recent modest global climate warming has ended and climate has stabilized since 2000 with dramatic cooling during the past two years (as evidenced by ocean cooling and unusually snowy and/or cold winters and cool summers in both Northern and Southern hemispheres). In fact, there has been no statistically significant warming since 1995. The role of greenhouse gases in heat retention is a single critical part of the complex dynamic processes that regulate Earth’s atmospheric temperature. The natural processes involved in maintaining a moderate global temperature are not well understood and, consequently, are not modeled in computer simulations. Consequently, the role of greenhouse gases in climate change appears to be vastly overstated and unsupported by either validated scientific evidence or observation. The theory that claims greenhouse gases can significantly impact climate predicts a “fingerprint” of greenhouse warming will emerge in the form of a tropical mid-troposphere warming signal. The predicted signal is completely absent from observed tropical mid-troposphere temperature (The Missing Greenhouse</p> | |

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| | | | | | | Signature, Dr David Evans, david.evans@sciencespeak.com , 21 July 2008). As it stands, this paragraph is highly prejudicial, misleading, and unsupported by validated evidence. -- Webster, (Retired DA/DoD) | |
| | P | Webster, R. | 4 | | | Box: Beneficial & Detrimental Impacts By failing to note the dangers of global cooling, the current version of this paragraph is highly prejudicial toward a warming scenario (The Deniers, Lawrence Solomon, “Chapter Five, Is It Warmer?” with contributions by Vincent Gray, Syun-Ichi Akasofu, Robert Carter, 2008). This prejudice is an assumption not supported by evidence or any validated scientific work. The historic record reveals that cooling is far more devastating to humanity than warming. To even suggest otherwise is dishonest. The dangers of significant global cooling must be reflected in the material of this paragraph. Recommend rewriting the entire paragraph to briefly summarize the relative dangers of warming and cooling and point out that at this time it is not known with any certainty which will occur in the future, or whether either would have a significant human component, and consequently, we should be preparing contingency plans for the most extreme conditions of either warming or cooling from currently unpredictable natural processes. As written, this paragraph is highly prejudicial, misleading, dishonest in its warming bias, and is unsupportable with validated evidence. -- Webster, (Retired DA/DoD) | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| | P | Webster, R. | 4 | | | Box: Irreversible Losses The statements in this paragraph are unsupportable with validated scientific evidence and are biased toward a conclusion that a warming climate is our only concern. Significant sea level drop due to polar ice build-up in a prolonged cooling period would dramatically affect international shipping and change coastlines in ways that would make existing harbors land-locked novelties. The dangers of climate cooling are potentially greater than climate warming and the historic record informs us that in the near future climate cooling is inevitable; future climate warming is not. Consequently, recommend rewriting the entire paragraph to summarize irreversible effects of both warming and cooling. As written, this paragraph is highly prejudicial toward a warming scenario, misleading, conveys a clear warming bias, and the assumption of dangerous levels of future warming is unsupportable with validated evidence (The Deniers, Lawrence Solomon, “Chapter Five, Is It Warmer?” with contributions by Vincent Gray, Syun-Ichi Akasofu, Robert Carter, 2008). -- Webster, (Retired DA/DoD) | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |

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|  | P | Webster, R. | 4 | | | <p>Box: Urgency of Action</p> <p>The contention that there is a growing urgency is completely contrary to recent observational evidence. Poles are not warming as predicted; they are now cooling. The Arctic has seen a significant reversal of summer sea ice decline to the point where 2008 summer ice extent is roughly 500,000 sq km greater than at the same time in 2007 (see http://igloo.atmos.uluc.edu/cgi-bin/test/print.sh?fm=07&fd=28&fy=2007&sm=07&sd=28&sy=2008 and http://igloo.atmos.uluc.edu/cgi-bin/test/print.sh?fm=08&fd=08&fy=2007&sm=08&sd=08&sy=2008). Predicted tropical mid-troposphere greenhouse warming fingerprint is non-existent (The Missing Greenhouse Signature, Dr David Evans, david.evans@sciencespeak.com, 21 July 2008), underlying assumptions of IPCC models concerning sensitivity to CO2 climate forcing is vastly overstated and may carry the wrong sign, i.e., net forcing may result in cooling, not warming (“Climate Sensitivity Reconsidered”, Christopher Monckton, July 2008, APS newsletter, Physics & Society). The role of clouds and water vapor is poorly considered and both play a critical role in heat retention/cooling by natural processes (Climate Confusion, Roy W. Spencer, 2008; and, “Climate Change Science: An Analysis of Some Key Questions,” Committee on the Science of Climate Change, Division of Life and Earth Sciences, National Resource Council, 2001, http://www.gerio.org/OnLnDoc/pdf/ClimateChangeScience.pdf). Recent short-term warming (most likely due substantially or completely to natural processes) at the end of the 20th century has been reversed since the beginning of the 21st century (As Earth Cools Data Centers Busy Reinventing the Past, Joseph D’Aleo, 2008). In short, there is no compelling rationale for urgent action beyond preparation of plans for dealing with prolonged warming or cooling episodes of natural climate variability. As written, this paragraph is highly prejudicial, misleading, conveys a clear bias, and is unsupported by validated evidence. It should either be deleted in its entirety or rewritten to warn against any hasty, costly action based on alarmist theories that have not withstood either scientific or observational challenge. -- Webster, (Retired DA/DoD)</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |
| | P | Michaels | 4 | 3 | | <p>Box-Irreversible Losses</p> <p>Comment: There are common adaptations to drought-induced deflation, such as the shelter belts that were planted in the Great Plains in response to the dust bowl. There are similar adaptations to high-runoff via soil stabilization. Those promoting switchgrass-based ethanol will clearly mitigate much of this. This is</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |

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| | | | | | <p>yet another example of the overly pessimistic nature of the Report. Why don't you mention that there are likely some very simple adaptations to drought that societies have undertaken for centuries?</p> <p>Recommendation: Revise the statement to reflect this. As it now stands, the statement fails to meet the authors' claim of representing the "the best available science" (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Michaels , Cato Institute</p> | |
| P | Goklany | 5 | | | <p>Box-Tipping Point</p> <p>The statement on tipping points (page 5) is based on speculation rather than any analyses. This misses one of the major points about science and the raison d'être of the CCSP, which is to help society base its actions on rational analysis rather than speculation. What tipping points are we talking about here? When are these specific climatic tipping points likely to occur, what will be their impacts and when are the impacts of these tipping points likely to occur? How certain are we about (a) the occurrence of climatic tipping points, (b) their timing, (c) their impacts, (d) the timings of the impacts, and (e) our inability to cope with the impacts when they occur?</p> <p>Consider, for example, the hypothesized tipping point of a melting Greenland Ice Sheet. According to the IPCC WGI SPM (2007, p. 17), "If a negative surface mass balance were sustained for millennia, that would lead to virtually complete elimination of the Greenland Ice Sheet and a resulting contribution to sea level rise of about 7 m.." [Emphasis added.]</p> <p>First, where is the showing that a negative surface mass balance will, in fact, be sustained for millennia? Even if AOGCMs were perfect, one would have to question the validity of any such exercise, assuming it exists. What socio-economic scenarios would that based upon? What is assumed regarding the sum total of fossil fuels available to humanity? How likely is that such scenarios can be forecast with any accuracy beyond a few decades, let alone millennia?</p> <p>Second, the paleo record indicates that sea levels have occasionally risen at much more rapid rates in the past than 7 meters per millennia (e.g., Alley et al. 2005), and both humanity and the rest of nature were able to cope. So even if a climatic "tipping point" translates into a great sound bite, it doesn't necessarily translate into anything spectacular in terms of impacts that cannot necessarily be dealt with. In the absence of any analysis of the magnitudes, probabilities, impacts, the ability to deal with them, the cost of avoiding tipping points, etc., the discussion</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |


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| | | | | | <p>about tipping points is nothing but speculation, and doesn't belong in a scientific assessment, as this document purports to be.</p> <p>I also note that I haven't seen any showing that tipping points, if any, will necessarily have only negative impacts. Is there a physical law or mathematical theorem that indicates that ordains that?</p> <p>I would recommend excluding discussion about tipping points in the Executive Summary. Alternatively, it should focus on the scientific issues, namely, what tipping points are we specifically talking about, what is their likelihood, what probability can be assigned to the magnitude and timing of their impacts, what's the confidence level surrounding the probability estimates, what is the reason for believing that tipping points will necessarily have negative outcomes, etc. (see above).</p> <p>Reference Alley, R.B., Clark, P.U., Huybrechts, P., Joughin, I. 2005. Ice-Sheet and Sea-Level Changes. Science 310: 456-460 Goklany</p> | |
| P | Haapala | 5 | | | <p>Box-Tipping Points</p> <p>Tipping Points are a concept from advertising / marketing and are not recognized in the physical sciences. They are not defined or substantiated in the text of the USP. This entire section on tipping points must be deleted. Without such a correction the USP fails to meet the authors' claim of representing the "best available science" (p.14) and the "best available evidence" (p.15) as well as violates standards of objectivity.</p> <p>Haapala, NIPCC</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Keillor | 5 | | | <p>Box-Tipping Point</p> <p>The passing of tipping points and crossing of thresholds may also cause irreversible changes, trigger feedbacks that will accelerate climate changes, or bring abrupt climate changes.</p> <p>Keillor, ASFPM</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Keillor | 5 | | | <p>Box-Rates of Change</p> <p>Rates of climate change are also of great concern to human societies which have problems with making rapid adaptations. What do you mean by "change that occurs very quickly"? The message in this paragraph should match the tone of the Urgency of Action paragraph.</p> <p>Keillor, ASFPM</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Keillor | 5 | | | <p>Box-Limits of Adaptation</p> | Thank you. The Executive Summary has undergone major revision |

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| | | | | | Limits include more than the challenge of a moving target. Rates of climate change may exceed possible rates of adaptation. There are other limits as well that should be drawn from the body of the report. Keillor, ASFPM | based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | National Wildlife Federation | 5 | | | Box-Limits to Adaptation the text in the box doesn't really make the case that there are limits to adaptation and it is unclear what those limits might be. A better title might be "Adaptation will be a moving target" or "Adapting to New Climate Conditions will Present Unforeseen Challenges" (too long). Also, I tend to think that humans can adapt to all sorts climate conditions, but we just might not like the end result. National Wildlife Federation | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Pogue | 5 | | | Box-Tipping Point Not clear exactly what the tipping point for climate change is. Does it mean that when there is a complexity of cross-impacts of human systems and natural detrimental impacts from climate change that cannot be reversed, we cannot change the effects? Have we surpassed the threshold, so there is nothing we can do? If so, identify those tipping points. Is the result irreversible changes? Pogue, CFM - ASFPM Coastal Committee Co-Chair | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Pogue | 5 | | | What is missing is a paragraph on FEMA-supported mitigation options. Mitigation is defined as reducing the potential damages caused by more severe and frequent storm events and is mentioned throughout this report. Through FEMA tremendous amounts of Federal and State funding, policies, Executive Orders, and regulations have been dedicated to reducing the effects of the very impacts mentioned in this report: flooding, sea level rise, coastal erosion, storm surge, coastal inundation, and how these impacts damage vulnerable structures built in special flood hazard areas. It has been FEMA's goal to attain community sustainability through various programs and policies by reducing community vulnerability to the damages resulting from extreme flooding and storm events. Local communities and all 50 States are required to identify the risks and vulnerabilities to natural hazard threats that may result in these negative impacts. Additionally, they are mandated to identify and implement mitigation actions to reduce the potential impacts of these natural hazard events in the future. Pogue, CFM - ASFPM Coastal Committee Co-Chair | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Stouffer | 5 | | | Limits to Adaptation The last sentence's tone is wrong. Seems like hyperbole. Is rate or magnitude of change (or both) in view? | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |

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| | | | | | Stouffer, GFDL/NOAA | |
| P | URS | 5 | | | <p>Box: Tipping Point</p> <p>Not clear exactly what the tipping point for climate change is. Does it mean that when there is a complexity of cross-impacts of human systems and natural detrimental impacts from climate change that cannot be reversed, we cannot change the effects? Have we surpassed the threshold, so there is nothing we can do? If so, identify those tipping points. Is the result irreversible changes?</p> <p>URS</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | URS | 5 | | | <p>What is missing is a paragraph on FEMA-supported mitigation options. Mitigation is defined as reducing the potential damages caused by more severe and frequent storm events and is mentioned throughout this report. Through FEMA tremendous amounts of Federal and State funding, policies, Executive Orders, and regulations have been dedicated to reducing the effects of the very impacts mentioned in this report: flooding, sea level rise, coastal erosion, storm surge, coastal inundation, and how these impacts damage vulnerable structures built in special flood hazard areas. It has been FEMA’s goal to attain community sustainability through various programs and polices by reducing community vulnerability to the damages resulting from extreme flooding and storm events. Local communities and all 50 States are required to identify the risks and vulnerabilities to natural hazard threats that may result in these negative impacts. Additionally, they are mandated to identify and implement mitigation actions to reduce the potential impacts of these natural hazard events in the future.</p> <p>URS</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | URS | 5 | | | <p>Box: Limits to Adaptation</p> <p>Limits include more than the challenge of a moving target. The rates of climate change may exceed the possible rates of adaptation. There are other limits as well that should be drawn from the body of the report. What is the difference between adaption and mitigation? This should be clarified. Are there regulatory programs in which adaption could be enforced, as with mitigation? It is a strong and valid point that adaptation addresses the “moving target associated with climate change,” particularly in light of the point that this report makes: the fact that we do not know the timing or scope of the effects of climate change.</p> <p>URS</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Webster, R. | 5 | | | <p>Box: Limits to Adaptation</p> <p>The statement, “We will not be adapting to a new steady state, but rather to a moving target. Climate will be continually changing, sea-level rise will be ongoing, and the</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |

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| | | | | | precise amount and timing of these changes cannot be predicted with a high level of certainty. While humans have adapted to gradual changes in the past, we are now entering uncharted territory.” is pure speculation unsupported by validated scientific evidence and is, in fact, completely refuted by observational evidence. Climate is always changing; change is the natural condition of climate. The rate of change varies, as the historic record reveals. There is nothing in the current record that suggests present and future rates of change will be atypical of climate variability throughout the current interglacial period. Sea levels could just as well be falling due to global cooling as rising due to global warming. As written, this paragraph is highly prejudicial, misleading, conveys a clear bias, and is unsupported by validated evidence. It should be deleted in its entirety. -- Webster, (Retired DA/DoD) | |
| P | Webster, R. | 5 | | | Box: Temperature Bar This is meaningless and serves only to suggest warming due to varying shades of yellow/red. As such it is misleading and not representative of current or projected climate cooling over the next several decades. It serves no useful purpose and should be deleted. -- Webster, (Retired DA/DoD) | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Michaels | 5 | 1 | | Box-Tipping Points The words “tipping” or “tipping point” appear nowhere in the subsequent text. Recommendation: This paragraph in the executive summary must be removed. Michaels , Cato Institute | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Michaels | 5 | 3 | 5 | Box-Limits to Adaptation It is very clear that Homo sapiens was around during the two rapid climate changes 12,800 and 8,200 years ago. Despite our small numbers at that time, we clearly adapted and prospered as a species. We are NOT in uncharted territory in human history, and we have a much greater technological arsenal at our disposal than we did in prehistoric times. Recommendation: Statement is not justified and needs to be removed. This requires Key Finding 9.1 to be modified to state that planning requires a wider envelope, but that we are still well within the ranges of climate experienced by our species. As it now stands, the statement fails to meet the authors’ claim of representing the “the best available science” (p. 14) and otherwise violates applicable objectivity requirements. | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |

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| | | | | | Michaels , Cato Institute | |
| P | Goklany | 6 | | | <p>Pages 6-11</p> <p>There may be publication AND reporting bias in the climate change research literature resulting from the fact that there seems to be a much more thorough listing of and research into negative impacts than into positive or indifferent impacts. One example would seem to be in the field of human health where there is apparently more work done on extreme heat than on extreme cold, if the Executive Summary for SAP 4.6 (on Human Health) is to be given credence. That states on p. ES-6:</p> <p>“It is very likely that heat-related morbidity and mortality will increase over the coming decades. According to the U.S. Census, the U.S. population is aging; the percent of the population over age 65 is projected to be 13% by2010and 20% by 2030 (over 50 million people). Older adults, very young children, and persons with compromised immune systems are vulnerable to temperature extremes. This suggests that temperature-related morbidity and mortality are likely to increase. Similarly, heat-related mortality affects poor and minority populations disproportionately, in part due to lack of air conditioning. The concentration of poverty in inner city neighborhoods leads to disproportionate adverse effects associated with urban heat islands.</p> <p>“There is considerable speculation concerning the balance of climate change-related decreases in winter mortality compared with increases in summer mortality. Net changes in mortality are difficult to estimate because, in part, much depends on complexities in the relationship between mortality and the changes associated with global change. Few studies have attempted to link the epidemiological findings to climate scenarios for the United States, and studies that have done so have focused on the effects of changes in average temperature, with results dependent on climate scenarios and assumptions of future adaptation. Moreover, many factors contribute to winter mortality, making highly uncertain how climate change could affect mortality. No projections have been published for the U.S. that incorporate critical factors, such as the influence of influenza outbreaks.”</p> <p>The above suggests a lack of symmetry, whether advertently or otherwise, in efforts to pursue positive impacts versus negative impacts. The Executive Summary of the Synthesis Product should note this possibility.</p> <p>I also note that even where some work has been done, SAP 4.6 neglects to mention it. For example, Deschenes and Moretti (2007), which estimates that 8%-15% of</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |


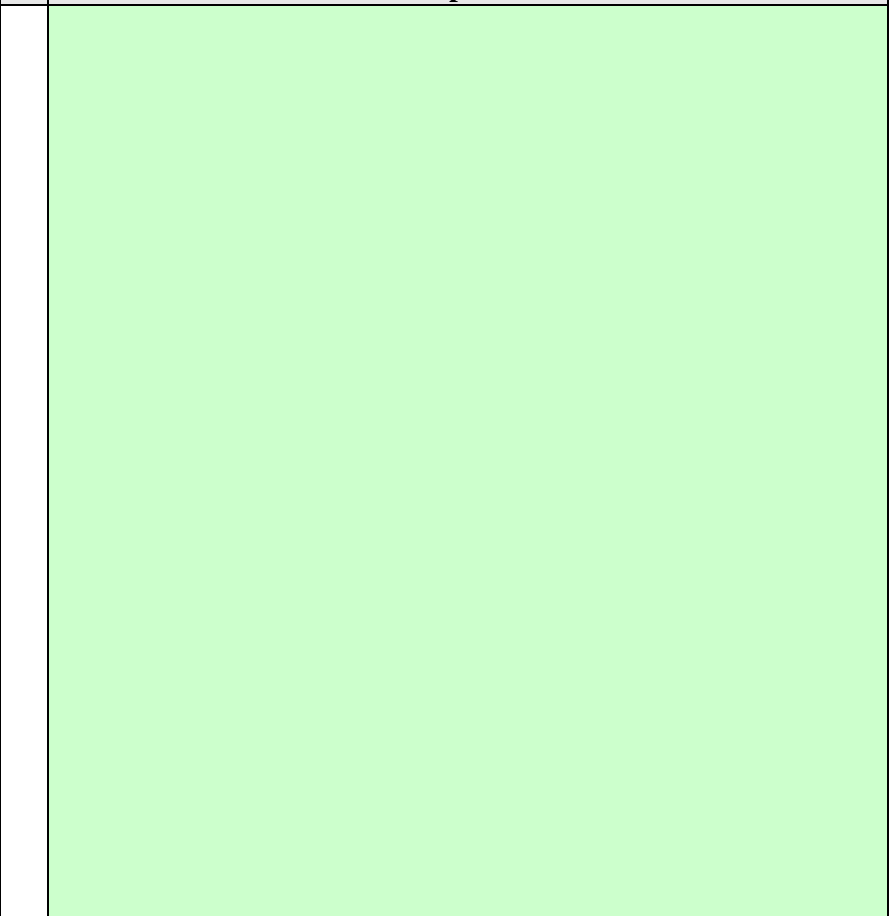
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|  | | | | | | <p>the total gains in life expectancy experienced by the US population over the past 30 years may be because of ongoing migration from the cold Northeastern states to the warmer Southern states, is ignored. They also estimate that every year, 5,400 deaths are delayed by changes in exposure to cold temperature induced by migration. Also it should be noted that in general, in the US and Europe, deaths in winter exceed deaths in summer, and that increase in mortality following extreme heat is largely due to “harvesting” of deaths that would likely were “imminent”, while the increase in mortality following extreme cold is long lasting (e.g., Donaldson et al 1998; Eng and Mercer 2000; McGeehin and Mirabelli 2001; Keatinge 2002; Stewart et al 2002; Mercer 2003; Deschenes and Moretti 2007).</p> <p>References Deschenes, Olivier and Moretti, Enrico, "Extreme Weather Events, Mortality and Migration" (2007). NBER Working Paper No. W13227 Available at SSRN: http://ssrn.com/abstract=99810. [NOTE: This paper is peer reviewed. It thanks two anonymous referees.] Donaldson GC; Ermakov SP; Komarov YM; McDonald CP; Keatinge WR. 1998. Cold related mortalities and protection against cold in Yakutsk, eastern Siberia: observation and interview study. <i>BMJ</i> 317(7164): 978-82. Eng H; Mercer JB. 2000. The relationship between mortality caused by cardiovascular diseases and two climatic factors in densely populated areas in Norway and Ireland. <i>J Cardiovasc Risk</i> 7(5): 369-75. Keatinge WR. 2002. Winter mortality and its causes. <i>Int J Circumpolar Health</i> 61(4): 292-9. McGeehin MA; Mirabelli M. 2001. The potential impacts of climate variability and change on temperature-related morbidity and mortality in the United States. <i>Environ Health Perspect</i> 109 Suppl 2: 185-9. Mercer JB. 2003. Cold--an underrated risk factor for health. <i>Environ Res</i> 92(1):8-13. Stewart S; McIntyre K; Capewell S; McMurray JJ. 2002. Heart failure in a cold climate. Seasonal variation in heart failure-related morbidity and mortality. <i>J Am Coll Cardiol</i> 39(5): 760-6. Goklany</p> | <div style="background-color: #e0ffe0; border: 1px solid black; padding: 5px;"> </div> |
| | P | Honeycutt | 6 | | | <p>Suggested changes are as follows. In each case, original text is quoted. Suggested replacement text is unquoted. Justification for the proposed change is in brackets.</p> | |


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| | | | | | | <p>p. 6: “Human-induced climate change and its impacts are apparent now throughout the United States.”</p> <p>There is some evidence that emissions from the burning of fossil fuels has contributed to some of the warming observed globally since the 19th century. [The impacts are far from “apparent” in the United States, as no particular weather event can be shown to have been caused by anthropogenic climate change (ACC), and there is no credible theory linking regional fluctuations in extreme weather events to ACC.]</p> <p>“Global warming is unequivocal and is due primarily to human-induced emissions of heat-trapping gases and other pollutants”</p> <p>Global warming is unequivocal. There is some evidence from computer models that human-induced emissions of heat-trapping gases are a major cause. [Given the general uncertainty of the computer models, and the fact that the primary evidence for anthropogenic as opposed to natural climate change comes from them, it is a vast overstatement to claim that globally warming is “primarily” due to human-induced emissions.]</p> <p>“Observed changes in the United States include temperature increases, sea-level rise, increased heavy downpours, rapidly retreating glaciers, regional droughts, substantial changes in sensitive wildlife, earlier snowmelt, and altered timing and amount of river flows”</p> <p>[This should simply be removed, as there is no credible evidence linking any of these to human causes.]</p> <p>“Impacts of these changes are apparent in many facets of society including health, water, food, energy, and quality of life.”</p> <p>[This vacuous statement should be removed.]</p> <p>“Many climatic changes are occurring faster than projected even a few years ago.”</p> | |

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| | | | | | <p>The temperature record since 1998 indicates that global warming may be slowing down or reversing.</p> <p>“Global emissions of heat-trapping gases are now increasing even more rapidly than the highest emissions scenario scientists have been analyzing.”</p> <p>[I’m not sure whether the above is true, but if so, it should be made into a separate bullet point.]</p> <p>“Arctic sea ice and the large ice sheets on Greenland and parts of Antarctica are melting faster than expected.”</p> <p>[With regard to Arctic sea ice, this claim is false and should be removed. After a low-ice year in 2007, due to wind not warming, arctic ice levels have rebounded in 2008. Antarctica as a whole has shown record winter ice extents recently. Replace with:] Evidence from the extent and melting rate of polar and Greenland ice sheets is inconclusive.</p> <p>“The degree to which future climate will change, and the scope and magnitude of the impacts, depend on choices made now.”</p> <p>[This entire bullet point and its sub-points should be removed as they are highly speculative and based on little credible evidence. The same is true for points 4 and through 7.]</p> <p>Honeycutt</p> | |
| P | King | 6 | | | <p>(NOTE: Lumping all comments on the Key Findings, by this gentleman, into one section, so you can quickly deal with it.)</p> <ol style="list-style-type: none"> 1. Global Warming has occurred since the last Ice Age but warming now is in line with past warming. Water is the biggest green house gas responsible for warming and its not man that produces it. Also CO2 is about 3 % of the green house gas and we have only responsible for a fraction of it. Glaciers are both receding and advancing. The majority of glaciers are not even monitored. However, Antarctica represents 90% of the ice in the world and it has been increasing each year for decades. Even the computer models show this. 2. Greenland and the Arctic have decreased over the last decades but the last year the Arctic has increased in size. Your point on Antarctica is deceptive because | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |

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| | | | | | <p>you are only talking about the northern 2% but overall its gaining ice and getting colder. Its true that CO2 is increasing but not outside the natural bounds. Further CO2 trails Global Warming, in other words as a result of warming not the other way around.</p> <p>3. Its not true that a 1 degree increase will occur in the next decade. Its likely we are in for a cooling phase due to the lack of sunspots. Also its only a 1 degree F change and not a 1.5 degree change. Next the amount of warming we see will have almost nothing to do with us. The ocean, volcanos and forest fires all put out magnitudes more CO2</p> <p>4. The droughts on the early 1930's were much worse than anything we have now. Also, the last several years have cooled not warmed. This is documented by satellites. Ground temp gauges are only in certain locations, suffer from urban warming and many of Russia's monitor have been closed several decades ago. Warmer climates are healthier to people than cool climates. Look at the plagues of the middle ages. Cold related deaths far out weight warm related deaths.</p> <p>5. Low lying coasts have always been vulnerable to sea level rise, surges and hurricanes. This has nothing to do with us thought. The sea levels have been much higher in the past and much lower. Sea levels have done what they have always done, raise and lower.</p> <p>6. Water that is available depends on the weather which is always changing. There is no constant change that isn't reversed in the future. The only reason water will be scarce is because of population increase or normal weather changes.</p> <p>7. If anything increased CO2 and warming will make life easier since plants will grow better and less people will die from extreme cold.</p> <p>8. Its true that more people live closer to coasts than before but that is our only problem, allowing them to live where normal weather events can hurt them. Again we have hardly any effect on climate.</p> <p>9. What bunk. Science uses history for much of its results. If you use only climate models to predict the future then we are in trouble since they are inherently inaccurate. This has been proven again and again.</p> <p>King, Public Citizen</p> | |
| P | National Wildlife Federation | 6 | | | <p>This section provides an excellent overview of the current understanding of climate change and the important implications. The language is straightforward and conveys a powerful message of urgency.</p> <p>National Wildlife Federation</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |
| P | Pielke, Sr. | 6 | | | <p>This Draft CCSP report failed to adequately report on the understanding of the role</p> | <p>Thank you. The Executive Summary has undergone major revision</p> |

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| | | | | | | <p>of humans within the climate system by the climate science community. As just one example, the statement is made in the text that</p> <p>"Human-induced climate change and its impacts are apparent now throughout the United States. Global warming is unequivocal and is due primarily to human-induced emissions of heat-trapping gases and other pollutants".</p> <p>This claim is inconsistent with the conclusions in the 2005 NRC report that there are other first order human climate forcings;</p> <p>National Research Council, 2005: Radiative forcing of climate change: Expanding the concept and addressing uncertainties. Committee on Radiative Forcing Effects on Climate Change, Climate Research Committee, Board on Atmospheric Sciences and Climate, Division on Earth and Life Studies, The National Academies Press, Washington, D.C., 208 pp</p> <p>where it is concluded that</p> <p>"Regional variations in radiative forcing may have important regional and global climatic implications that are not resolved by the concept of global mean radiative forcing...Regional diabatic heating can also cause atmospheric teleconnections that influence regional climate thousands of kilometers away from the point of forcing. Improving societally relevant projections of regional climate impacts will require a better understanding of the magnitudes of regional forcings and the associated climate responses." [page 5 of the 2005 NRC report]</p> <p>and</p> <p>"Several types of forcings, most notably aerosols, land-use and land-cover change, and modifications to biogeochemistry, impact the climate system in nonradiative ways, in particular by modifying the hydrological cycle and vegetation dynamics. Aerosols exert a forcing on the hydrological cycle by modifying cloud condensation nuclei, ice nuclei, precipitation efficiency, and the ratio between solar direct and diffuse radiation received. Other nonradiative forcings modify the biological components of the climate system by changing the fluxes of trace gases and heat between vegetation, soils, and the atmosphere and by modifying</p> | <p>based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |

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|  | | | | | | <p>the amount and types of vegetation....Nonradiative forcings have eventual radiative impacts, so one option would be to quantify these radiative impacts. However, this approach may not convey appropriately the impacts of nonradiative forcings on societally relevant climate variables such as precipitation or ecosystem function. Any new metrics must also be able to characterize the regional structure in nonradiative forcing and climate response." [page 6 of the 2005 NRC report].</p> <p>Thus, the scientific evidence presented in the 2005 NRC report supports the perspective that</p> <p>The human influence on the climate system is significant and involves a diverse range of first-order climate forcings, including, but not limited to the human input of CO2;</p> <p>and does not support the draft CCSP Karl et al report perspective that</p> <p>The human influence is dominated by the emissions into the atmosphere of greenhouse gases, particularly carbon dioxide.</p> <p>The draft CCSP report did not even include the findings from the 2005 NRC report in their assessment. To attribute and predict future "global climate change impacts in the United States" without including the role of other human climate forcings, as well as the role natural climate variations, results in a clearly biased and erroneous assessment of climate science and climate impacts with which to communicate to policymakers.</p> <p>Pielke, Sr., University of Colorado</p> |  |
| | P | Webster, R. | 6 | 1 | | <p>There exists neither observational data nor validated scientific research to support this entire paragraph. Current climate change is unremarkable when compared to climate change over at least the past 1000 years. Recent short-term decadal-scale warming is well within normal climate variability; there is nothing "unprecedented" about recent warming due to natural processes (As Earth Cools Data Centers Busy Reinventing the Past, Joseph D'Aleo, 2008). There is not one validated scientific study that has revealed a discernible human component to observed climate change throughout the 20th century. To assume a discernible human component is not a scientific conclusion, it is a political assumption that has no place in this report.</p> | |

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|  | | | | | | <p>There is no “rapid onset” of climate change that is distinguishable from the typical pace of observed climate variability over the past 1000 years. Since the peak cold of the Little Ice Age, there has been a relatively steady modest upward linear trend in global temperatures. Given historic natural climate variability, it is inappropriate to take a few decades of observational evidence and extrapolate such evidence to century-scale conclusions. Furthermore, there is a serious question about whether there is any evidence of non-natural origin to any recent climate warming that is distinguishable from the steady linear trend of averaged global temperature since the depth of cold experienced during the Little Ice Age (The Deniers, Lawrence Solomon, “Chapter Five, Is It Warmer?” with contributions by Vincent Gray, Syun-Ichi Akasofu, Robert Carter, 2008). While heat-trapping gases play a critical role in the maintenance of sufficiently moderate atmospheric temperatures characterized by modest day/night temperature contrasts, there is no validated scientific research nor any evidence in past climate history that demonstrates modest changes in “heat-trapping gases” (or even substantial changes) are a significant climate change force. The notion that reductions in human emissions of “heat-trapping gases” will produce a discernible impact on climate is pure speculation unsupported by validated scientific research. Once again, a bias that is fixated on the dangers of a warming climate due to modest increases in greenhouse gases is evident in the last sentence of this paragraph. Failure to evidence any concern for the likely alternative of rapid cooling indicates a pre-conceived biased approach to this draft report that must be eliminated if it is to be taken seriously. -- Webster, (Retired DA/DoD)</p> | |
| | P | Webster, R. | 6 | 1 | 1 | <p>No validated scientific research has ever discerned conclusively a human component to climate change in the US. Efforts to distinguish an assumed “natural” climate trend from a presumed “human” component are speculative and cannot be validated. One cannot support one theory by developing another, neither of which have been adequately proven by validated scientific observation/research. While the past several decades have seen modest warming due to natural causes such as unusually active solar activity (The Deniers, Lawrence Solomon, chapters 9-11 with contributions by Eigil Friis-Christensen, Henrik Svensmark, Sami Solanki, Jasper Kirkby, Nir Shaviv, Habibullo Abdussamatov, George Kukla, Rhodes Fairbridge, et al., pp 133-175, 2008), warm-phase Pacific Decadal Oscillation (PDO), recurrent strong warm phase El Niño Southern Oscillation (ENSO), etc., many of these natural factors have now reversed (e.g., to unusually quiet solar activity, cool-phase PDO, etc.). Global surface ocean temperatures have fallen during the past few years as</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |

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| | | | | | | <p>have global average temperature. The northern tier of states experienced one of the harshest winters, 2007-2008, in memory with record snow cover and prolonged snow cover. The Asian continent experienced one of the most bitter winters in memory with many deaths attributed to the cold and persistent deep snows. As it now stands, this section is highly biased and ignores observed reality during the early 21st century. It should be removed in its entirety. -- Webster, (Retired DA/DoD)</p> | |
| | P | Allen | 6 | 2 | | <p>Well, global warming is very equivocal! Not only has temperature cooled for the past 6 years, but the decrease from Jan. 07 to Jan. 08 of 0.7 degree C was a modern record! The oceans have been cooling for several years and sea levels have actually gone down due to that cooling! Even the IPCC has stated that temperature will cool over at least the next decade!</p> <p>People were skiing in many parts of the west this year well past the normal time that snow dissappears! Glaciers are expanding in many parts of the world, including California. Record snowfall occurred in many areas of the mid west this past winter! The amount of ice in the antartic is a record amount!</p> <p>If you want this report to have any credibility you need to get the basic facts correct and yet what you now present is propaganda! Allen, Public Citizen</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |
| | P | Buller | 6 | 2 | 4 | <p>“Observed changes in the United States include temperature increases, sea-level rise, increased heavy downpours, rapidly retreating glaciers, regional droughts . . . “ This sentence illustrates how disconnected this paper is from the real world. Temperature increases have not been monotonic; in fact, temperatures in the U.S. are not higher than they were in the 1930s and have declined recently. Temperatures have not just declined since the abnormal El Nino-induced 1998 highs, but have declined back to temperatures experienced in the 1980s. Sea-level rises have been experienced since the end of the Little Ice Age. Additionally, sea levels have not increased in the last couple of years. There has not been an increase in heavy downpours – just our focus on them. Although glaciers in general have retreated, they started their retreats long before the Industrial Revolution increased CO2 emissions. Regional droughts have been part of United States history long before the nation formed. Recent droughts have not been as severe as those experienced earlier in the 20th centuries.</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |

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| | | | | | Snow levels were often at record levels in the past year. Buller, Northwestern College | |
| P | Buller | 6 | 2 | 2 | <p>“Global warming is unequivocal and is due primarily to human-induced emissions of heat-trapping gases and other pollutants.” This claim is not correct. Although many do hold this view, hundreds of knowledgeable scientists disagree. Global warming experienced over the past 140 years is very much within the range experienced in the past 2000 years, and therefore the existence of warming does not prove that it is “due primarily to human-induced emissions of heat-trapping gases and other pollutants.” Although Global Climate Models claim to isolate the impact of CO2 as a driver of temperature, such a relationship can be established only through the use of dummy variable inserted to account for aerosols. The use of such dummy variables does not verify that CO2 drives temperatures – only that the models can establish a modeling relationship between CO2 and temperatures. The relationship between CO2 and temperatures is credible due to laboratory observations, but the models go far beyond laboratory observations with positive feedback loops that may not exist in the chaotic environment of the atmosphere. Again, the modeled relationship, featuring positive feedback loops is possible because of the dummy variables used for aerosol values. Reality might be significantly different.</p> <p>Moreover, observed temperatures for the past century are more clearly associated with periodic oscillations (such as the PDO) rather than monotonic increases in CO2. For example, recently, temperatures have fallen as expected with the oscillations and now stand no higher than they were 20 years ago.</p> <p>Buller, Northwestern College</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | DuHamel | 6 | 2 | 1 | <p>Global warming is unequivocal and is due primarily to human-induced emissions of heat-trapping gases and other pollutants".</p> <p>Comment: The draft report invokes computer models but presents no observational evidence of human-induced warming. It also ignores Douglass, D.H. et al. 2007, A comparison of tropical temperature trends with model predictions, International Journal of Climatology DOI:10.1002/joc.1651 which shows that the model predicted "fingerprint" of GHG warming does not occur in nature. Key finding #1 is unsupported by any actual evidence. This makes the whole report propaganda rather than science.</p> <p>DuHamel, Consulting Geologist</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |


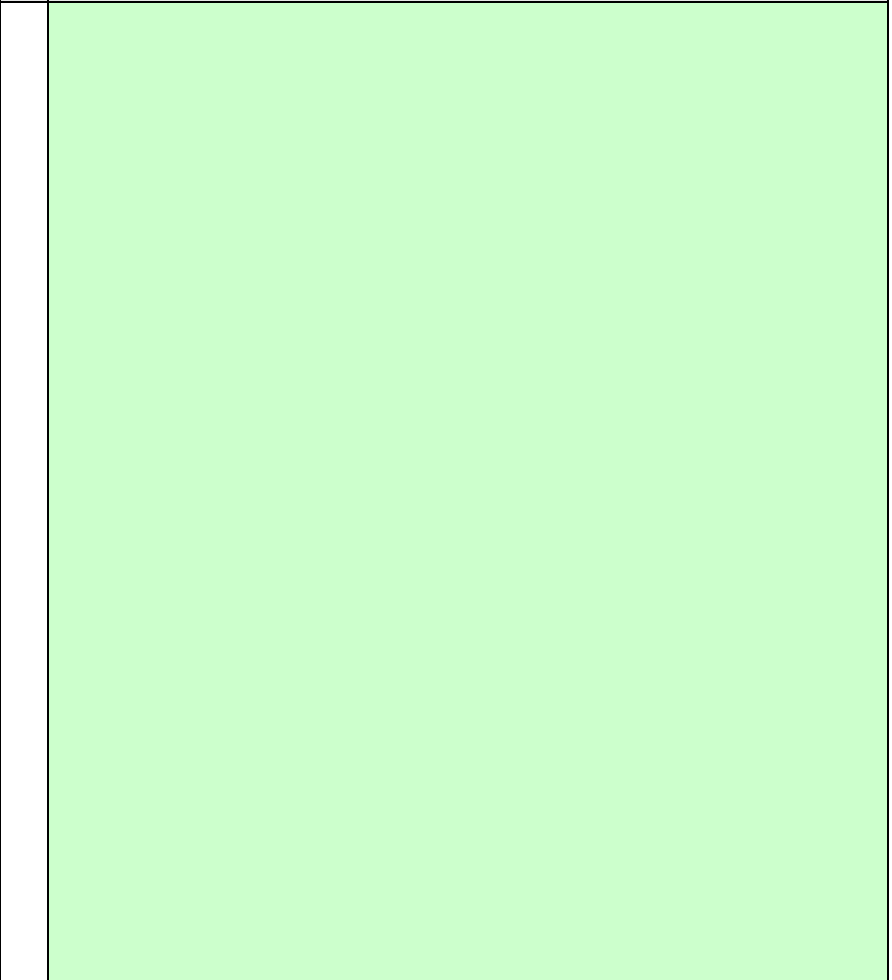
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| | P | Goklany | 6 | 2 | | <p>Items 1, Bullets 1 and 2 In light of Comments 6 and 38, the first two bullets under Finding 1 (page 6), should be rewritten as follows:</p> <ul style="list-style-type: none"> ▪ “Global warming is unequivocal BUT THE REQUISITE STUDIES HAVE NOT BEEN UNDERTAKEN TO DETERMINE WHAT FRACTION OF THE OBSERVED WARMING IS UNLIKELY TO BE DUE TO NATURAL CAUSES, WHAT FRACTION and is due primarily due to human-induced CAUSES, AND WHAT FRACTION OF THE LATTER IS DUE SPECIFICALLY TO manmade emissions of heat-trapping gases and other pollutants.” [NOTE: It’s unclear what period of time the original text refers to. Is it valid for all the warming since 1880, 1950 or 1978? Please clarify.] ▪ “Observed changes in the United States include temperature increases, sea-level rise, increased heavy downpours, rapidly retreating glaciers, regional droughts, substantial changes in sensitive wildlife, earlier snowmelt, and altered timing and amount of river flows, BUT IT HASN’T BEEN DETERMINED WHAT FRACTION OF THESE CHANGES ARE LIKELY TO BE DUE TO NATURAL CAUSES, OR IF MANMADE, THEN DUE TO WELL-MIXED GREENHOUSE GAS EMISSIONS.” [One should note that in the absence of the suggested modification, the casual reader – including most lay persons – could be misled into believing that all the observed changes are due to manmade causes primarily due to greenhouse gas emissions.] <p>Goklany</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |
| | P | Goklany | 6 | 2 | | <p>Bullet 3 should be rewritten as follows:</p> <ul style="list-style-type: none"> ▪ “Impacts of these changes are apparent in many facets of society including health, water, food, energy, and quality of life, AND WHILE SOME OF THESE MAY BE DETRIMENTAL, FOR THE VAST MAJORITY OF AMERICANS FOOD, HEALTH AND THE QUALITY OF LIFE HAS IMPROVED TREMENDOUSLY DURING THE LAST CENTURY, NOT LEAST BECAUSE OF THE VERY PROSPERITY THAT HAS INCREASED — AND IS ITSELF FUELED BY — GREENHOUSE GAS EMISSIONS.” <p>Rationale: This modification is necessary for a fuller understanding of the context</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |

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| | | | | | <p>within which climate change and its impacts will occur in the United States. For reference regarding whether life has improved over the past century, check Goklany (2007c), or the Historical Statistics of the U.S at http://www.census.gov/compendia/statab/hist_stats.html.</p> <p>Reference Goklany, I.M. 2007c. The Improving State of the World: Why We're Living Longer, Healthier, More Comfortable Lives on a Cleaner Planet (Cato Institute, Washington, DC, 2007).</p> <p>Goklany</p> | |
| P | Haapala | 6 | 2 | | <p>Item 1 “Global warming is unequivocal...” There has been no global warming observed for the past 10 years and eight out of the nine authorities that report monthly global temperatures have observed a distinct cooling.i Thus, “Global warming is unequivocal...” is a false statement. This entire section must be dropped. Without such a correction the USP fails to meet the authors’ claim of representing the “best available science” (p.14) and the “best available evidence” (p.15) as well as violates standards of objectivity.</p> <p>Haapala, NIPCC</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Knappenberger | 6 | 2 | | <p>Bullet 1 Why is this the only key finding with a reference? And exactly what is the citation to? There is no Endnote section for “Key Findings”.</p> <p>Recommendation: Add references to all “Key Findings” Knappenberger, New Hope Environmental Services</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Knappenberger | 6 | 2 | | <p>Bullet 1 Over which span of years does this bullet refer to? The globe has warmed dramatically in the past 15,000 years, and most of it was not caused by human beings. The globe warmed from 1900 to 1940 and most of that was likely not caused by human beings. The global temperature did not warm the mid-1940s to the mid-1970s. Was that caused by human beings? The global temperature has not warmed much during the 21st century. Is that caused by human beings?</p> <p>Recommendation: Clarify the timeframe as the statement is not generally applicable to all time periods. Knappenberger, New Hope Environmental Services</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Knappenberger | 6 | 2 | | <p>Bullet 3</p> | Thank you. The Executive Summary has undergone major revision |

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| | | | | | <p>Are the “impacts” negative or positive? And how have they been assessed? For instance, the CCSP SAP 4.6 page 2-16 finds that “Heat-related mortality has declined over the past decades (Davis et al., 2002; Davis et al., 2003a; Davis et al., 2003b).” What has been the impact on “food?” The data from the National Agricultural Statistic Service shows that for the major food crops (e.g. corn, soybeans, wheat), U.S. production and yield have set records highs in recent years. What are the impacts on “quality of life?” Data from the U.S. Department of Commerce shows that the U.S. per capita income has been rising steadily (perhaps even accelerating).</p> <p>Recommendation: Remove this bullet entirely, or make it clear that the human health, food supply, quality of life etc. have been steadily improving in the U.S. and that climate change has had little direct (statistically detectable) impact. Without such a correction, the statement fails to meet the authors’ claim of representing the “the best available science” (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | <p>based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |
| P | Lavin | 6 | 2 | | <p>This first paragraph states as fact a series of unsubstantiated allegations which have not been proven to be true by the same criteria which assesses drug safety and efficacy.</p> <p>Change requires definition of a baseline and scientific acceptance of that baseline as valid. This is not the case in the statement that "global warming is unequivocal" and that "Observed changes in the United States include temperature increases". Does the climate change group purposely leave out the cooling in the south eastern USA? What is the baseline for Global warming? the Roman period? the middle ages? 1940? 1980? Talking about changes is meaningless unless you have a controlled baseline. You do not have such a baseline.</p> <p>The temperature of the United States is not substantially different than it was in 1940 or 1895 according to USHCN temperature monitoring.</p> <p>Glaciers have been melting in Glacier National Park since 1870. Glaciers are getting larger in many parts of the world, and Indian scientists do not agree that there has been any change in any glacier in the Himalayas that they follow. Snow melt was so delayed this last winter in Colorado that roads were not clear until</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |

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| | | | | | <p>May.</p> <p>Better sentences would be: Of the 15,000 known glaciers in the USA, 22 have been monitored. 10 of those glaciers seem to be retreating over the ten year period of observation. We have no long term data on the cyclicity of glacier movements. What percent of glaciers have been monitored world wide? what is known about natural variation of glaciers to provide a baseline?</p> <p>Lavin, Public Citizen</p> | |
| P | Lederer | 6 | 2 | | <p>Bullet 1</p> <p>This sentence contains two inappropriate statements:</p> <p>Global warming has unequivocally occurred since the last ice age, but it appears to have happened sporadically with periods of warming and cooling. The statement unqualified by period of time is inappropriate. It certainly is not true since the planet began as a ball of molten rock and apparently is not true for the last few years.</p> <p>The second objection is to the flat statement "is due primarily to human-induced emissions of heat-trapping gases and other pollutants". That is theory and though accepted theory by many is not certainty as it is presented.</p> <p>Lederer, Public Citizen</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |
| P | Oakley | 6 | 2 | | <p>Bullet 1</p> <p>Merriam-Webster defines unequivocal as:</p> <p>1: leaving no doubt : clear, unambiguous 2: unquestionable</p> <p>If the evidence for global warming was “clear” “unambiguous” “unquestionable” there would be no serious debate about it. But there is vigorous debate about weather or not there is global warming, as can be found out with just a few minutes research.</p> <p>The Earth has experienced four and a half billion years of climate change. Is the Earth warmer now than it has ever been in the past? The scientific consensus says no. Is there some optimum global temperature that represents the historic “normal” temperature of the Earth? Again, the scientific consensus says no. Has</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |

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| | | | | | | <p>the Earth ever warmed in the past in the absence of human intervention? Yes and it has cooled too.</p> <p>So what has the globe warmed in relation too and what exactly is the optimum temperature that humanity should strive to keep the Earth at? Since nobody can even hope to define an optimum temperature for the Earth because of the fundamental lack of understanding of the entire climate process, the selection of what is warmer than normal or cooler than normal is an entirely arbitrary, not a scientific decision.</p> <p>Stating that the globe is warming without describing scientifically why a certain temperature is used as the baseline and what a normal variation from that temperature actually is skips the very first step in any scientific inquiry.</p> <p>And how is the “current” temperature of the Earth measured? Ground based thermometers have been the primary historical data source used, but there are so many problems with these measurements, from data provenance, to site location problems (see www.surfacestations.org), to lack of data sources from huge swaths of the globe, that these measurements are scientifically meaningless, especially when considering the magnitude of the effects adopting this report would have on the US economy..</p> <p>A better way to measure global temperatures is with satellites, because they remove a lot of the problems associated with ground based measurements. So what does the satellite data show?</p> <p>If there has been cooling in the atmosphere for the last 21 years, how can global warming be “unequivocal”?</p> <p>Next, what about the oceans, which have the second biggest effect on global climate after the Sun? Has the temperature of the oceans been increasing or decreasing? Nobody really knows, because the only satellite data we have just measures the ocean surface temperatures. The vast majority of the thermal mass of the oceans lies far below these surface readings and what data we do have about those temperatures is spotty at best. What drives ocean currents and even how many different currents there are in the world’s oceans are also so poorly understood that enormous amounts of research need to be done before we can even have a</p> | |

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|  | | | | | | <p>fundamental understanding of the Earth’s oceanic systems.</p> <p>How about the Sun itself? How does it affect global climate? The obvious answer is a lot. But what is understood about its affect is limited to laboratory studies and mathematical and computer models. There has been next to nothing done to actual verify any of these models and studies due to the enormous difficulties involved. Relying on unproven studies and models to make major policy decisions is bad policy as well as bad science.</p> <p>There are many other factors that affect global climate that are also not well understood. The Earth’s axis of rotation varies over time, its orbit goes from elliptical to circular, Sunspots and solar storms come and go and volcanoes erupt.</p> <p>The bottom line is that nobody knows what “normal” climate is, the best atmospheric temperature data we have shows a 21 year cooling trend and we have an extremely poor understanding of how the whole global climate system behaves, which makes the statement “Global warming is unequivocal” demonstrably false. And stating that it “is due primarily to human-induced emissions of heat-trapping gases and other pollutants” completely ignores the gaping holes in our understanding of global climate and makes the whole sentence in the first bullet of point 1 on page 6 (Executive Summary) a statement of opinion of not of fact.</p> <p>Therefore, Page 6 (Executive Summary) Point 1, first bullet “Global warming is unequivocal and is due primarily to human-induced emissions of heat-trapping gases and other pollutants1” should be removed from the report in its entirety and be replaced with a section outlining both sides of the global warming debate. (NOTE: Figure on collation disk.) Oakley, TGV Rockets, Inc.</p> |  |
| | P | Singer | 6 | 2 | | <p>These detailed comments relate primarily to the USP claim [p.6] that “human induced climate change and its impacts are apparent now throughout the United States.” This sentence is not known to be true; it is a conjecture at best and should not be stated as a fact. ***It should be qualified as a mere possibility or dropped.***</p> <p>This claim is not backed by any solid evidence within the report itself as we will detail below.</p> | |

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| | | | | | | <p>1. There is no scientific consensus USP claims [p.6] that anthropogenic global warming [AGW] is “unequivocal.” This word implies a general scientific consensus. There is no evidence that such a consensus exists.</p> <p>a. We should note, for the record, that consensus never guarantees scientific truth. Only data and observations can determine whether a scientific hypothesis stands or falls.</p> <p>b. The idea of a scientific consensus, which has been strongly promoted by former Vice President Al Gore, seems to stem from a study published in Science magazine by Naomi Oreskes [2004], a professor of history of science at the University of California San Diego. The study is based on sloppy research -- as evidenced by the fact that the author was forced to publish a correction [2005] admitting that she had overlooked 90 percent of the published abstracts whose examination led to her claim. In any case, her claim of “consensus” is contradicted by numerous polls of scientists, by declarations and petitions signed by hundreds and even thousands of scientists, and by actual studies of published abstracts. Specifically, we have polls taken by Bray and von Storch, declarations such as the Statement of Atmospheric Scientists [1992], the Heidelberg Appeal [1992], the Leipzig Declaration [1996], and the more recent Oregon Petition, originally by 19,000 scientists and now by more than 31,000 [www.oism.org], as well as a reexamination of published papers [Schulte 2008].</p> <p>c. We note that the National Academy/National Research Council specifically denies that there is “unequivocal” agreement. Their report “Climate Change Science: An Analysis of Some Key Questions” [2001] states that “[b]ecause of the large and still uncertain level of natural variability inherent in the climate record and the uncertainties in the time histories of the various forcing agents (and particularly aerosols), a causal linkage between the buildup of greenhouse gases in the atmosphere and the observed climate changes during the 20th century cannot be unequivocally established. The fact that the magnitude of the observed warming is large in comparison to natural variability as simulated in climate models is suggestive of such a linkage, but it does not constitute proof of one because the model simulations could be deficient in natural variability on the</p> | |

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| | | | | | decadal-to-century time scale” (p. 17) [from Fed Register, pg 52930; emphases added]. Conclusion There is no scientific consensus about the cause of global warming. ***Therefore, the term “unequivocal” should be deleted.*** Singer, Science & Environmental Policy Project | |
| P | Stouffer | 6 | 2 | | The rapid onset – The tone is wrong. This is a call to action and therefore not an assessment of the science. Stouffer, GFDL/NOAA | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Webster, R. | 6 | 2 | | Bullet 1 Outdated reference. Inaccurate conclusion regarding human causation. Refuted by observational evidence. There is no validated scientific research that clearly identifies human activity as the source of any significant observed climate change. To state or imply otherwise is a gross disservice to the reader and objective scientific pursuit of truth. Should be modified to remove human causation and warming bias or omitted entirely. -- Webster, (Retired DA/DoD) | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Webster, R. | 6 | 2 | | Bullet 2 Most of this bullet is a fabrication and is refuted by observational evidence. There has been no significant impact on sea-level due to human activity. There are a variety of ongoing geologic forces that continuously change base sea level (rising and falling) at many locations around the globe. Temperatures clearly stabilized in the early 2000s and have been stabilized or down-trending over most of the first decade of the 21st century with a notable drop-off during the past two years. This reversal of trend in temperatures is a clear refutation of the AGW theory. Recent research validates the position that there is no link between human activity releasing heat-trapping gases and “increased heavy downpours, rapidly retreating glaciers, regional droughts, substantial changes in sensitive wildlife, earlier snowmelt, and altered timing and amount of river flows.” (Climate Confusion, Roy W. Spencer, “Chapter 1: Global Warming Hysteria” pp 11-34, 2008; Shattered Consensus, edited by Patrick J. Michaels, Chapter 5, “Severe Weather, Natural Disasters, and Global Change,” Randall S. Cerveny, pp 106-117, 2005) While many of these may have been observed, they cannot be attributed to human activity affecting climate. Should be severely modified or omitted entirely as misleading, speculative, and dishonest. -- Webster, (Retired DA/DoD) | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Webster, R. | 6 | 2 | | Bullet 3 | Thank you. The Executive Summary has undergone major revision |


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| | | | | | Pure conjecture regarding its attribution to human emissions of “heat-trapping gases”. Should be removed entirely as entirely speculative. -- Webster, (Retired DA/DoD) | based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Goklany | 6 | 3 | | <p>Item 2 is based on selective information. While many climate changes may be occurring faster than projected, many others are not. For example, global temperature has not warmed significantly over the past dozen years or so (see e.g., http://vortex.nsstc.uah.edu/public/msu/t2lt/tltglhmmam_5.2), the oceans may not have warmed as much as expected (e.g., Lyman et al. 2006; Willis et al. 2007, 2008), and there are recent papers that suggest sea level may not be rising as rapidly as suggested by the IPCC’s latest report (Berge Nguyen et al. 2008; Unnikrishnan and Shankar 2007; Kolker and Hameed 2007; Wöppelmann et al. 2007; see also http://sealevel.colorado.edu/, which suggest slowing of sea level rise). In any case, regardless of whether recent data show ups or downs, it’s not clear that these short term blips will become long term trends. Accordingly, Finding 2 should be jettisoned, or it should be modified to: (a) acknowledge that many other climatic changes may not be occurring as rapidly as projected, and examples provided above should be included, and (b) note that it is downright unscientific, if not risky, to base long term policy on short term data, particularly when it comes to climate change, itself a long term phenomenon.</p> <p>References Berge-Nguyen, M., A. Cazenave, A. Lombard, W. Llovel, J. Viarre, and J.F. Cretaux. 2008. Reconstruction of past decades sea level using thermosteric sea level, tide gauge, satellite altimetry and ocean reanalysis data. <i>Global and Planetary Change</i>, 62, 1–13. Unnikrishnan, A.S., and D. Shankar. 2007. Are sea-level-rise trends along the coasts of the north Indian Ocean consistent with global estimates? <i>Global and Planetary Change</i>, 57, 301–307. Kolker, A. S., and S. Hameed. 2007. Meteorologically driven trends in sea level rise. <i>Geophysical Research Letters</i>, 34, L23616, doi:10.1029/2007GL031814. Wöppelmann, G., B. Martin Miguez, M.-N. Bouin, and Z. Altamimi. 2007. Geocentric sea-level trend estimates from GPS analyses at relevant tide gauges world-wide. <i>Global and Planetary Change</i>, 57, 396–406. Lyman, J. M., J. K. Willis, and G. C. Johnson. 2006. Recent cooling in the upper ocean, <i>Geophys. Res. Lett.</i>, 33, L18604, doi:10.1029/2006GL027033. Willis J. K., J. M. Lyman, G. C. Johnson, J. Gilson. 2007, Correction to “Recent</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |

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| | | | | | cooling of the upper ocean”, Geophys. Res. Lett., 34, L16601, doi:10.1029/2007GL030323. Willis J. K., D. P. Chambers, R. S. Nerem (2008), Assessing the globally averaged sea level budget on seasonal to interannual timescales, J. Geophys. Res., 113, C06015, doi:10.1029/2007JC004517. Goklany | |
| P | Keillor | 6 | 3 | | Item 2 Add accelerating sea level rise to the bullets that support the statement: “Many climatic changes are occurring faster than projected even a few years ago.” Keillor, ASFPM | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Knappenberger | 6 | 3 | | Bullet 1 Emissions of “heat-trapping gases” are not a “climatic change”—which is the subject of Key Point 2. The salient measure for “climate change” is the atmospheric concentration of “heat-trapping” gases. And current rates of the atmospheric concentration growth of “heat-trapping gases” are most definitely not “occurring faster than projected even a few years ago.” See the data on the atmospheric concentration growth rate of radiatively active gases at CDAIC in comparison to the timeline of atmospheric concentrations for the same gases given in the IPCC SRES scenarios. Recommendation: Remove this bullet entirely, or make it clear that the atmospheric concentration of “heat trapping gases” is not increasing more rapidly than projected a few years ago. Without such a correction, the statement fails to meet the authors’ claim of representing the “the best available science” (p. 14) and otherwise violates applicable objectivity requirements. Knappenberger, New Hope Environmental Services | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Lederer | 6 | 3 | | This is misleading. Most projections from a few years ago projected rising global average temperature. By 3 of the 4 major temperature records, the global average temperature has been falling, and certainly not matching the projections. The fact that "global emissions of heat-trapping gases" are increasing faster than expected a few years ago is not the same as climactic changes occurring faster. Indeed, the divergence between the two over the last few years is troubling, not confirming. | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |


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| | | | | | <p>Citing isolated ice records is inappropriate to support the major misleading statement, particularly the statement about "parts of Antarctica". Many climactic changes are occurring slower than anticipated a few years ago. High on that list is global average temperature.</p> <p>Citing Arctic sea ice would seem at odds with the explanation of arctic sea ice being influenced strongly by wind patterns.</p> <p>Lederer, Public Citizen</p> | |
| P | Pogue | 6 | 3 | | <p>Item 2</p> <p>As a result of “changes occurring faster than projected a few years ago,” and with mention of Arctic sea ice and large ice sheets in Greenland and parts of Antarctica melting faster than expected, would it not be prudent to also mention accelerated sea level rise? Add accelerating sea level rise to the bullets that support the statement: “Many climatic changes are occurring faster than projected even a few years ago.”</p> <p>Pogue, CFM - ASFPM Coastal Committee Co-Chair</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Stouffer | 6 | 3 | | <p>climate change – What is the definition of climate change in this document? Does it include just the forced response or does it include forcing response and variability? Many of the statements below use the forced plus variability. Some seem to use the just the response.</p> <p>Stouffer, GFDL/NOAA</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Stouffer | 6 | 3 | | <p>Item 2, Bullet 3</p> <p>large ice sheets ... are melting faster than expected – Where are the past projections of the ice sheet response? What was “expected?”) The changes could just be natural variability. Our ignorance is very high. Tone.</p> <p>Stouffer, GFDL/NOAA</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | URS | 6 | 3 | | <p>Key Find #2</p> <p>As a result of “changes occurring faster than projected a few years ago,” and with mention of Arctic sea ice and large ice sheets in Greenland and parts of Antarctica melting faster than expected, would it not be prudent to also mention accelerated sea level rise? Add accelerating sea level rise to the bullets that support the statement: “Many climatic changes are occurring faster than projected even a few years ago.”</p> <p>URS</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Webster, R. | 6 | 3 | 1 | <p>Not only has projected warming not occurred as anticipated, late 20th century warming ceased as the 21st century began and a distinct cooling trend has developed</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily |

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| | | | | | in both the northern hemisphere and southern hemisphere since 2006. As it stands, this “finding” is blatantly inaccurate. It must be stricken. -- Webster, (Retired DA/DoD) | referenced so it is clearer that it is based on sound science. |
| P | Webster, R. | 6 | 3 | | Bullet 1 Until an actual link can be established between human emissions of heat-trapping gases and significant (or even detectable) climate change, reliance on inadequate computer simulations (The Deniers, Lawrence Solomon, “Chapter Eight, Models and the Limits of Predictability” with contributions by Hendrik Tennekes, Freeman Dyson, Antonino Zichichi, David Bromwich, et al., pp 109-132, 2008; and Shattered Consensus, edited by Patrick J. Michaels, chapter 10, “Limitations of Computer Predictions of the Effects of Carbon Dioxide on Global Climate”, Eric Posmentier and Willie Soon, 2000, 2005) based on flawed assumptions about sensitivities, insufficient data, and incomplete science, the presumed conclusions of this bullet are pure speculation not based on any validated scientific research. Should be omitted or modified to reflect reality. -- Webster, (Retired DA/DoD) | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Webster, R. | 6 | 3 | | Bullet 2 Arctic sea ice expanded significantly during the cold northern hemisphere winter of 2007-2008 after a major summer melt during the summer of 2007. The 2008 summer melt is significantly less than that of summer 2007 before the PDO shift from warm to cold phase (see http://igloo.atmos.uluc.edu/cgi-bin/test/print.sh?fm=07&fd=28&fy=2007&sm=07&sd=28&sy=2008 and http://igloo.atmos.uluc.edu/cgi-bin/test/print.sh?fm=08&fd=08&fy=2007&sm=08&sd=08&sy=2008). Greenland ice coverage is balanced with some melting and some ice sheet build-up – there is no significant difference in Greenland’s ice cover from what it has been over at least the past 1000 years. Antarctic ice shelf breakup is due to long term pressure on the ice shelves from the extended multi-decadal Antarctic cooling that continues to produce greater winter sea-ice coverage and build-up of the Antarctic ice cap. This bullet is completely refuted by both the historic record and current observations. Suggest section 2 be entirely deleted as pure speculation refuted by actual observational evidence. -- Webster, (Retired DA/DoD) | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Goklany | 6 | 4 | | Item 3 The report needs to provide the methodology and data used to generate estimates of the amount and rate of climate change that has occurred to the present, | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |

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| | | | | | | <p>particularly for the US, so that the estimates provided here can be replicated and verified by other researchers and interested members of the public.</p> <p>While there is little doubt, based on phenological information, that climate has warmed over the past few decades, there are problems in quantitatively estimating the total amount and rate of warming, and the portion of the warming in the United States that is due to not just human action but, more specifically, to well-mixed greenhouse gases. These problems include the following.</p> <p>First, information on a large number of temperature monitoring sites and instrumentation raise the possibility that the instrumental record may be compromised because of inhomogeneities, and siting and maintenance issues (including relocation of stations and monitors in all three dimensions, changes in monitoring equipment and protocols, introduction of heat sources and sinks, and changes in land use and land cover at all geographical scales in and around the stations, etc.) (Watts 2007, 2008; Hale et al. 2006; Pielke et al. 2007a, 2007b). See Appendix A. Second, McKittrick and Michaels (2007) have shown that global temperature trends in climate data seems to be correlated to some extent with socioeconomic variables, which indicates that data may be contaminated by socioeconomic factors, that is, the errors are not random. Third, satellite and ground-based trends differ in the magnitude of the recent trend.</p> <p>Until these issues are comprehensively and definitively addressed — and they are not in this report — quantitative estimates based on these data regarding the magnitude and rate of warming and the proportion of warming that may be attributed to specific causes must be deemed to be unreliable.</p> <p>Given these reasons, it’s not clear how, for instance, the reported 1.5°F estimated increase (page 6, Finding 3) was arrived at. Neither a reference nor a methodology is provided. It’s not even clear over what period of time this increase was estimated for (although I see reference to a 1.5°F increase over the past century on p. 28; see below) . Does this include only the 48 contiguous states or does it also include Alaska? What is the error bar associated with this estimate in light of the various inhomogeneities, siting and maintenance issues (e.g., changes in siting, monitoring equipment, measurement protocols, maintenance practices, etc.) noted above? How were inhomogeneities, etc., dealt with? Were these stations tossed out or were the data corrected? If the later, what were the methodologies used and were they — both the methodologies and result changes, if any — verified? How were the error bars estimated? That these questions are not raised, let alone answered, reinforce the claim that this</p> | |

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|  | | | | | | <p>document suffers from a lack of scientific rigor.</p> <p>I also recognize that answering the above questions is tedious and time consuming, but since climate change and responses to it could cost hundreds of billions annually, such an effort would be well worth it. Thomas Alva Edison is reported to have said that genius is one percent inspiration and 99 percent perspiration. That is even more true of science, particularly when it involves dealing with vast amounts of surface data taken over generations from a wide variety of sources, using numerous different techniques and practices. Unfortunately, there may be no shortcuts to rigorously evaluating these data station-by-station and year-by-year.</p> <p>In addition, the phenological changes that have been reported, and which provide, in my opinion the best evidence of a changing climate, don't seem to be unique, certainly in the paleo record. For example, droughts have occurred in the West that have been longer and more severe than the spells of the late 20th century. Similarly wildfires, floods, hurricanes, etc. don't seem to be particularly extraordinary when the paleo record is considered. Given this, one cannot automatically rule out natural causes. In fact, there is no analysis furnished here that takes into consideration the cumulative uncertainties in forcings, temperature data, modeling uncertainties, etc. and uses them to rule out the null hypothesis that the current warming and its associated manifestations (such as changes in temperature, precipitation, wind patterns, etc.) are unlikely to be due to natural causes (based on the CCSP definition of "likely" being a two-third chance of occurring — itself an abuse of standard scientific convention – see below). I note that page 21 refers to an analysis that touches on this, but examination of the figures on that page suggest that uncertainties in forcing and instrumental measurements, among others, were not considered.</p> <p>Goklany</p> | <div style="background-color: #e0ffe0; border: 1px solid black; padding: 5px;"> </div> |
| | P | Goklany | 6 | 4 | | <p>Add a new Finding 3 to "Key Findings" which would place Finding 8 in its long term context, and read as follows:</p> <p>"In many respects the US is more immune to climate change and its impacts because it has substantial adaptive capacity which has allowed it to become more climate-proof today than it ever was (Ausubel 1991; Goklany 2007a). Despite any climate change that may have occurred:</p> | |

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| | | | | | | <ul style="list-style-type: none"> ▪ Deaths and death rates due to extreme events such as hurricanes, floods, lightning and tornados are lower today than they have been in the past (IPCC, WG II report, 2007, p. 622; Goklany 2000, 2006). I note that this matter has been raised previously, and reference was provided to Goklany (2006) but rejected on the excuse, selectively applied it seems, that that paper was not peer reviewed, so additional references are provided. [Also note that the data used is not proprietary and is easily available for CCSP authors to access and determine for themselves whether, in fact, deaths and death rates have indeed declined. That the CCSP authors didn't undertake such rudimentary analysis suggests a curious lack of curiosity, lack of due diligence, not-invented-here thinking, or all three. None of these traits is appropriate in scientists.] ▪ Property losses from hurricanes, and floods, while higher today than previously, have kept pace with society's increase in wealth and assets at risk rather than any changes in the frequencies and intensities of events (Pielke et al. 2007; Downton et al. 2005; Brooks and Doswell 2001; Goklany 2000) ▪ Agricultural productivity has increased several-fold (Goklany 2000; FAOSTAT 2008). ▪ Forested area has increased in the US. ▪ Many species are doing better today than they were doing previously (e.g., USDA/DOI 1992; Goklany 2007c, and references therein). ▪ Air pollution levels have dropped remarkably, including levels of ozone and secondary particulate matter." (Goklany 2007c, and references therein). <p>References Ausubel, J.H. 1991. "Does Climate Still Matter?" Nature 350: 649-652. Doswell III. C.A., Moller, A.R., Brooks, H.E. 1999. Storm Spotting and Public Awareness since the First Tornado Forecasts of 1948. Weather and Forecasting 14: 544-557. Downton, M.W.; Miller, J.Z.B.; Pielke Jr., R.A. 2005. Reanalysis of U.S. National Weather Service Flood Loss Database. Natural Hazards Review, February 2005: 13-22. FAOSTAT. 2008. Available at http://faostat.fao.org/. Goklany, I.M. 2000. "Potential consequences of increasing atmospheric CO2 concentration compared to other environmental problems." Technology, 7S,</p> | |

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|  | | | | | | <p>189-213.</p> <p>Goklany, I.M. 2006. Death and Death Rates Due to Extreme Weather Events: Global and U.S. Trends, 1900-2004. In: Höpfe, P. and R.A. Pielke, Jr. (eds.), 2006. Workshop on Climate Change and Disaster Losses: Understanding and Attributing Trends and Projections, Final Workshop Report. Hohenkammer, Germany, 25-26 May.</p> <p>Goklany, I.M. 2007a. “Integrated strategies to reduce vulnerability and advance adaptation, mitigation, and sustainable development,” Mitigation and Adaptation Strategies for Global Change, DOI 10.1007/s11027-007-9098-1.</p> <p>Goklany, I.M. 2007c. The Improving State of the World: Why We're Living Longer, Healthier, More Comfortable Lives on a Cleaner Planet (Cato Institute, Washington, DC, 2007).</p> <p>Pielke, Jr., R.A., Gratz, J., Landsea, C.W., Collins, D., Saunders, M., and Musulin, R., 2007. Normalized Hurricane Damages in the United States: 1900-2005. Natural Hazards Review (accepted).</p> <p>Goklany</p> | |
| | P | Goklany | 6 | 4 | | <p>Bullet 1</p> <p>Although it is unclear what period of time the increase of 1.5°F was estimated over — p. 28 suggests that it's a century — it is substantially higher than the latest estimate from NCDC's United States Climate Summary available from http://www.ncdc.noaa.gov/oa/climate/research/cag3/na.html. As of 10 August, 2008, the rate of increase from 1895-2007 (annual) was 0.12 °F per decade (and for July, 1895 to 2008 is 0.11°F per decade, or a 1.2°F increase over 112-113 years). So what exactly are these differences due to? Is the estimated 1.5°F change statistically significant? See also Comment 6.</p> <p>Goklany</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |
| | P | Goklany | 6 | 4 | | <p>Item 3, Bullet 3</p> <p>It should be noted that lowering emissions could be socioeconomically costly, potentially affecting poorer people disproportionately.</p> <p>Goklany</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |
| | P | Haapala | 6 | 4 | | <p>Item 3</p> <p>“The degree to which future climate will change...” This section states that controlling emissions can control climate change which, by necessity, includes that controlling emissions can prevent ice ages, the most dominant climate feature for the past two million years. The USP offers no explanation how controlling emissions can prevent future ice ages. Thus, this section must be</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |

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| | | | | | dropped. Without such a correction the USP fails to meet the authors' claim of representing the "best available science" (p.14) and the "best available evidence" (p.15) as well as violates standards of objectivity. Haapala, NIPCC | |
| P | Stouffer | 6 | 4 | | Item 3 The word "global" needs to be inserted. The temperature changes in the first bullet are for globally averaged temperatures. Stouffer, GFDL/NOAA | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Stouffer | 6 | 4 | | Bullet 3 Lower emissions result in a smaller magnitude and rate of climate change. Both should be mentioned. Stouffer, GFDL/NOAA | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Webster, R. | 6 | 4 | 1 | Since no discernible impact on global or US climate from human activity has been detected by any validated scientific research, this statement is false in its entirety. It should be replace by: "The degree to which future climate will change, and the scope and magnitude of the impacts, will likely be due to natural forces for which continuing climate change research may provide adequate warning." -- Webster, (Retired DA/DoD) | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Webster, R. | 6 | 4 | | Bullet 1 This is pure speculation that arises from analyses based upon two related flawed assumptions: (1) the residency time of CO2 in the atmosphere and, (2) the magnitude and sign of the climate sensitivity forcing due to increases in atmospheric CO2 ("Climate Sensitivity Reconsidered", Christopher Monckton, July 2008, APS newsletter, Physics & Society). The IPCC assumption that human CO2 emissions persist in the atmosphere for 50-200 years is not credible given the consensus of accepted scientific studies that clearly demonstrate less than a ten-year atmospheric residency for CO2 emissions in the atmosphere (The Deniers, Lawrence Solomon, "Chapter Six, Looking for CO2" with contributions by Tom Segalstad, Nir Shaviv, Syun-Ichi Akasofu, Robert Carter, et al., pp 82-83, 2008). Much of the observed net warming during the 20th century has been reduced by the rapid global cooling of the past two years (As Earth Cools Data Centers Busy Reinventing the Past, Joseph D'Aleo, 2008). Consequently, this bullet should be eliminated entirely as not representing the consensus of credible science. -- Webster, (Retired DA/DoD) | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Webster, R. | 6 | 4 | | Bullet 2 There is general agreement that the "amount of warming" over the "next few | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily |

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| | | | | | decades” will be zero as natural climate variability continues to produce global cooling over that time frame. None of the projected climate cooling over the next few decades is attributed to human activity. Consequently, nothing humans do will have any impact on future climate change. This bullet should be stricken as both obsolete, unsupported by validated scientific research, and misleading. Suppose climatologists were to agree that the end of the interglacial was upon us and a new ice age about to begin. Would a viable solution to the threat of severe global cooling be taken seriously if it came in the form of a proposal to burn fossil fuels in earnest (or otherwise artificially increase atmospheric CO2)? Of course not. Such a “solution” is laughable. Yet this “finding” suggests that a “solution” of that nature would be taken seriously. -- Webster, (Retired DA/DoD) | referenced so it is clearer that it is based on sound science. |
| P | Webster, R. | 6 | 4 | | Bullet 3 This claim is unsupported by any validated scientific research and should be stricken in its entirety. -- Webster, (Retired DA/DoD) | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Goklany | 6 | 5 | | Finding 4 is profoundly misleading. Per the above discussion (Comments 12 and 13), rewrite as follows: “AS THEY HAVE FROM THE BEGINNING OF TIME, extreme weather and climate are having increasing impacts on society. AS POPULATIONS INCREASE AND MORE PEOPLE VOLUNTARILY OPT TO LIVE IN WARMER CLIMATES, IN FLOOD PLAINS, AND ON THE COASTAL MARGINS, POPULATION EXPOSURE HAS INCREASED BUT THE SEVERITY OF IMPACTS HASN’T ALWAYS INCREASED IN PROPORTION, AND IN SOME NOTABLE CASES, IT HAS DECLINED: <ul style="list-style-type: none"> • REGARDLESS OF WHETHER the United States has experienced increases in heat waves, wildfires, heavy downpours, and in some regions, droughts, all of which are disrupting our lives, THE UNITED STATES IS MORE ABLE TO COPE WITH THE IMPACTS OF EXTREME EVENTS. • DEATHS AND DEATH RATES DUE TO EXTREME EVENTS HAVE DECLINED OVER THE LAST CENTURY (IPCC WG II REPORT 2007, PAGE 622; GOKLANY 2000, 2006). • PROPERTY LOSSES FROM HURRICANES AND FLOODS HAVE INCREASED IN TERMS OF NOMINAL OR REAL DOLLARS, BUT THERE HAS BEEN NO INCREASE WHEN MEASURED AS THE PERCENT OF | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |

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| | | | | | | <p>WEALTH OR ASSETS AT RISK (PIELKE ET AL. 2007; DOWNTON ET AL. 2005; BROOKS AND DOSWELL 2001; GOKLANY 2000). [For references, see Comment 13.]</p> <ul style="list-style-type: none"> • Extreme events affect every aspect of society and nature including human health, energy, transportation, agriculture, ecosystems, and water resources. • WHILE Atlantic hurricane intensity has MAY HAVE increased in recent decades IT'S UNCLEAR WHETHER THESE INCREASES ARE DUE TO HUMAN INDUCED CLIMATIC CHANGES, NATURAL VARIABILITY OR BETTER DETECTION TECHNIQUES WITH FINER SPATIAL AND TEMPORAL RESOLUTION. and a SOME STUDIES SUGGEST additional future increases are projected BUT WHETHER THIS WILL OCCUR IS UNCLEAR (see, e.g., Kossin 2007; Swanson 2007). SOME STUDIES ALSO SUGGEST A DECREASE IN THE NUMBER OF HURRICANES (see, e.g., Emanuel et al. 2008) [NOTE: the text should also provide an estimate of the observed increase in intensities and whether it's statistically significant, as well as estimates of the projected changes in intensity and frequency.] <p>References Emanuel, K, R. Sundararajan, and J. Williams. 2008. Hurricanes and global warming: Results from downscaling IPCC AR4 simulations. Bulletin of the American Meteorological Society, 89, 347-367. Kossin, J.P., et al., 2007. A globally consistent reanalysis of hurricane variability and trends. Geophysical Research Letters, 34, L4815, doi: 10.1029/2006GL028836. Swanson, K.L, 2007. Impact of scaling behavior on tropical cyclone intensities. Geophysical Research Letters, 34, doi:10.1029/2007GL030851. Goklany</p> | |
| | P | Michaels | 6 | 5 | | <p>Bullet 1 “all of which are disrupting our lives”.</p> <p>Comment: Definition of disrupt: to cause disorder or turmoil. Does the average person believe his life is being disordered by global warming? Is there sufficient disorder or turmoil to have an effect on our national economy? Show me the growth contractions. Even in the year after Katrina, the economy grew. From fall of 05 to fall 06 the Dow went up 1000 points.</p> <p>Recommendation: This phrase is simply unsupported and must be removed. Alter Key Finding 4.1 to reflect this.</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |

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| | | | | | Michaels, Cato Institute of Virginia | |
| P | Pogue | 6 | 5 | | Item 4 This section is missing a very important economic point: how the intensity and frequency of storm events, as well as wildfires and drought (all insurable), will continue to be disruptive. Shouldn't insurance also be mentioned? Perhaps it is the only mechanism in which these natural events are channeled through this sector, as a risk-segregating and risk-spreading vehicle for society and a window into the variety of ways in which the costs of climate change will manifest themselves and indirectly affect a large segment of the population. The author has cited some very impressive economic figures that should be highlighted here. "In an average year about 90% of the insured catastrophic losses worldwide are weather-related and the magnitude of these losses is growing." Other impressive facts include private and Federal insurers paying more than \$320 billion in claims on weather-related losses in the United States from 1980 to 2005. Pogue, CFM - ASFPM Coastal Committee Co-Chair | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Schmaltz | 6 | 5 | | Bullet 3 The claim that Atlantic hurricane intensity has increased in recent decades is unproven and untrue. Hurricanes have decreased in number and severity recently. Schmaltz, Public Citizen | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Stouffer | 6 | 5 | | Bullet 1 There is no trend in US heat waves due to the large amount of 1930's heat waves. Stouffer, GFDL/NOAA | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Stouffer | 6 | 5 | | Item 4, Bullet 3 Atlantic hurricane intensity – The statement while true is very misleading. The recent trend is larger than the projected trend. Models do not simulate the recent trend. Etc. Tone Stouffer, GFDL/NOAA | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | URS | 6 | 5 | | Key Find #4 This section is missing a very important economic point: how the intensity and frequency of storm events, as well as wildfires and drought (all insurable), will continue to be disruptive. Shouldn't insurance also be mentioned? Perhaps it is the only mechanism in which these natural events are channeled through this sector, as a risk-segregating and risk-spreading vehicle for society and a window into the variety of ways in which the costs of climate change will manifest themselves and indirectly affect a large segment of the population. The author | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |

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| | | | | | <p>has cited some very impressive economic figures that should be highlighted here. “In an average year about 90% of the insured catastrophic losses worldwide are weather-related and the magnitude of these losses is growing.” Other impressive facts include private and Federal insurers paying more than \$320 billion in claims on weather-related losses in the United States from 1980 to 2005.</p> <p>URS</p> | |
| P | Webster, R. | 6 | 5 | 1 | <p>The term “increasing” is a relative term. Increasing relative to what time frame? The lack of any reference framework for this statement invalidates the statement in its entirety. The 1930s still rank as the warmest decade in the US since the Little Ice Age began, despite the best efforts of the NCDC to “adjust” the data record (As Earth Cools Data Centers Busy Reinventing the Past, Joseph D’Aleo, 2008). There were repeating cycles of cooling and warming over the past 100 years that led to speculation that climate was warming, then cooling, then warming, then cooling, then warming, and now, evidently, cooling again. These cycles are normal and have persisted throughout while atmospheric CO2 has slowly and steadily trended upward at a fairly steady rate (linearly) from a low level reached during the Little Ice Age. Atmospheric CO2 has fluctuated well above 400 ppm during the past 1000 years and reached nearly 450 ppm several times since 1812 (A Primer on CO2 and Climate, Howard C. Hayden, Figure 7, “CO2 measurements made by chemical means in the Northern Hemisphere, 1812-1964, 11-year averages of 90,000 measurements” pg 9, 2007) and levels of atmospheric CO2 in excess of 1000 ppm are typical for most of the past 500 million years, with only one other period outside the current Ice Era where levels dipped briefly below 1000 ppm. By relying on a flawed method for analyzing ice core records to produce a proxy history of atmospheric CO2, this report ignores alternate proxy records that reveal much higher historic levels of atmospheric CO2. --</p> <p>Webster, (Retired DA/DoD)</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |
| P | Webster, R. | 6 | 5 | | <p>Bullet 1</p> <p>This claim is meaningless without a proper time framework. It serves to create alarm where none is apparently justified. One could easily create a framework that would justify just the opposite of this statement, i.e., that frequency and intensity of weather-related – not climate-related – events are not significantly changed from what is considered “normal” (Climate Confusion, Roy W. Spencer, “Chapter 1: Global Warming Hysteria” pp 11-34, 2008; Shattered Consensus, edited by Patrick J. Michaels, Chapter 5, “Severe Weather, Natural Disasters, and Global Change,” Randall S. Cerveny, pp 106-117, 2005). The bullet is both misleading and</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |

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| | | | | | unjustified and should be stricken. -- Webster, (Retired DA/DoD) | |
| P | Webster, R. | 6 | 5 | | Bullet 3 There is absolutely no validated scientific evidence to support this statement. It should be deleted. -- Webster, (Retired DA/DoD) | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Webster, R. | 6 | 6 | 1 | Storm surges always place coastal areas at risk. There is nothing new to this concept. There is no discernible increase in sea-level rise that can be attributed to human activity. Consequently, this statement amounts to a recitation of natural risks associated with living on the coast. To be fair and objective, consideration should be given to the potential for sea-level drop due to increased polar ice build-up. Any suggestion of human causation is purely speculative and should be stricken. -- Webster, (Retired DA/DoD) | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Webster, R. | 6 | 6 | | Bullet 1 It should be stated that global cooling could moderate these affects if sea-levels drop as polar ice build-up develops. -- Webster, (Retired DA/DoD) | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Webster, R. | 6 | 6 | | Bullet 2 It should be stated that global cooling could moderate these affects, e.g., sea-ice expansion, snow-buildup, lowered sea level, and glacial expansion. Natural climate variability can produce either warming or cooling. This report exhibits a persistent bias toward an unsupportable belief that long-term warming will continue indefinitely. There is no validated scientific research supporting that belief, consequently it is purely speculative. -- Webster, (Retired DA/DoD) | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Webster, R. | 6 | 6 | | Bullet 3 No sea-level lowering due to global cooling is discussed. This oversight requires correction. -- Webster, (Retired DA/DoD) | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Honeycutt | 7 | | | “Our vulnerability to climate change has been increased by some of our decisions.” Vulnerability to extreme weather events has been increased by some people’s decisions to live in hurricane zones, flood zones, and drought-prone regions. [None of this has anything in particular to do with climate change.] [Items 9 and 10 are again highly speculative and should be deleted.] | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |

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| | | | | | Honeycutt | |
| P | Haapala | 7 | 2 | | <p>Item 9</p> <p>“Historic climate and weather patterns are no longer an adequate guide to the future.” This finding repudiates all the projections of the models used in the USP; the graphs derived from these projections; and the conclusions based on these projections. The climate models are either validated by using historic climate and weather patterns or they are not validated. If so validated, by this finding the validations are inadequate and the projections are unreliable. If the climate models are not validated, the projections are speculative. Thus, all projections and associated graphs, findings, and conclusions based on these models must be deleted. The alternative is to explicitly declare with each projection, graph, finding, or conclusion that the projection, graph, finding, or conclusion is based upon unreliable and/or speculative computer models. Without such a correction the USP fails to meet the authors’ claim of representing the “best available science” (p.14) and the “best available evidence” (p.15) as well as violates standards of objectivity.</p> <p>Haapala, NIPCC</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |
| P | Goklany | 7 | 3 | | <p>It should be noted, in order to provide the appropriate context and to illustrate the difficulty of changing “our decisions”, that many of these decisions have been driven, in part because of the voluntary preference of Americans to gravitate toward warmer areas. So while this report seems to be of the view that warmer is worse, the general population, in fact, prefers warmer. This ought to be noted here since that is important background information, useful for understanding the broader context, including why population exposure and the amount of property at risk continues to rise. It should also be noted that a portion of the increase in life expectancy in the US may be due to the preferential migration toward the warmer areas (Deschenes and Moretti 2007; see Comment 3, above).</p> <p>Goklany</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |
| P | Goklany | 7 | 3 | | <p>This is true only if one believes that history starts and ends with the instrumental record. However, the historical record should also include the paleo record. And it is not clear that many of the projected climatic changes and their impacts are not similar to what may have occurred in the past. Absent any analysis to the contrary in this report, the Executive Summary should be careful as to how this is worded. Accordingly, rewrite this Finding as follows: “The instrumental record of climate and weather is not necessarily an adequate guide for the long term future...” and modify the first bullet. I also recommend stating that the</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |

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| | | | | | <p>paleo record has a lot to offer in terms of being a guide even for the future and that, in fact, given the uncertainties associated with modeling climatic changes, particularly at the regional and sub-regional levels, it is conceivable that paleo studies may prove to be a more reliable guide. I must also note that the CCSP is remiss in not adequately acknowledging and drawing upon paleoclimatic studies in the development of this report. [By the way, I am not a paleoclimatologist, so have no particular disciplinary ax to grind in this regard.]</p> <p>Goklany</p> | |
| P | Medlock | 7 | 3 | | <p>Item 8 Add a bullet for river corridors that have been settled and developed without consideration for increased flood levels and erosion associated with more frequent and heavy downpours.</p> <p>Medlock, ASFPM</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |
| P | D'Aleo | 7 | 4 | | <p>(NOTE: There are many figures and references associated with this comment. His full set of comments are on digital file)</p> <p>This comment is meant to address the claim that the past can no longer serve as a guide for the future from key finding #9:</p> <p>9. Historical climate and weather patterns are no longer an adequate guide to the future.</p> <ul style="list-style-type: none"> • Planning for providing water, energy, transportation, and other services has assumed the future would be like the past; this is no longer justifiable. • Long-lived infrastructure, from power plants to roads and buildings, must be designed and built taking climate change into account. • Long term planning will have to continually incorporate the latest information, as climate will be ever changing, requiring adaptation strategies to constantly evolve. <p>This statement is inexplicable for two reasons. First, you are using the warming from 1979 to 1998 while CO2 increased as evidence of the importance of the greenhouse effect. Your future forecast is based on extrapolation from the past and on climate models used by IPCC run by other centers such as NCAR and NASA and tuned to the past.</p> <p>The models have proven useless in predicting global and regional climate even on a seasonal and decadal basis. Whatsmore, government and industry is currently</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |

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| | | | | | | <p>relying on the past states of the atmosphere to successfully forecast the future on a seasonal and even decadal basis.</p> <p>THE MODELS This is not going to be a long critique of the climate models. I will leave that to others with more modeling experience. But here is what the IPCC modelers and others have said about these models:</p> <p>Kevin Trenberth IPCC Lead Author Chapter 3 of WG1 on Nature 2007 Weblog</p> <p>“None of the models used by IPCC are initialized to the observed state and none of the climate states in the models correspond even remotely to the current observed climate. In particular, the state of the oceans, sea ice, and soil moisture has no relationship to the observed state at any recent time in any of the IPCC models. There is neither an El Niño sequence nor any Pacific Decadal Oscillation that replicates the recent past; yet these are critical modes of variability that affect Pacific Rim countries and beyond.</p> <p>The Atlantic Multidecadal Oscillation, that may depend on the thermohaline circulation and thus ocean currents in the Atlantic, is not set up to match today’s state, but it is a critical component of the Atlantic hurricanes and it undoubtedly affects forecasts for the next decade from Brazil to Europe. Moreover, the starting climate state in several of the models may depart significantly from the real climate owing to model errors. I postulate that regional climate change is impossible to deal with properly unless the models are initialized.”</p> <p>IPCC Lead Author Renwick of NIWA “Climate prediction is hard, half of the variability in the climate system is not predictable, so we don’t expect to do terrifically well.”</p> <p>Ken Gregory in this summary story, shows how climate models have been shown to overstate the water vapor feedback (this summary discusses Ferenc M. Miskolczi, NASA, Spencer and Lindzen findings).</p> <p>Steve McIntyre has shown how actual temperatures have tracked to Hansen 1988 model projections. Hansen Scenario C supposes that CO2 are stabilized at 368</p> | |

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| | | | | | | <p>ppm in 2000 - a level already surpassed. Yet temperatures from GISS and RSS are trending lower than even Scenario C.</p> <p>USING PAST CYCLES AND TELECONNECTIONS IN LONG RANGE FORECASTS</p> <p>The Climate Prediction Center after the research on El Nino by their own Ropelewski and Halpert showed strong correlations with temperatures, began issuing multi-seasonal outlooks in the late 1980s. When Ants Leetma became chief on that long range branch, he advocated use of coupled climate models as the primary tool for the 15 month forecasts. Within a few short years, it was shown the skill of these climate models was not there and the statistical models, especially those related to ENSO provided better results.</p> <p>In private industry, the use of analogs where we match current state of major teleconnections like PDO, MEI, AMO, QBO, solar to past years has proven enormously successful. All the major forecast houses use some version of this “analog” approach for their predictions as far as a year or more in the future. Each one of these forecast houses and businesses have been successful in many years using this approach. While at WSI, we developed 3 teleconnection based statistical models including one analog that provided skill at 60% or higher, far above the skill of in-house climate models and CPC climate models.</p> <p>I started a hedge fund using these techniques and we were ranked #2 of 167 funds after two and ½ years in performance but our growth fell victim to the hedge fund collapse of 2006/07 when major funds like Amaranth went under. Though we had increased money under management by a factor 10 (\$5 to \$50 million) we fell short of our goal of \$100 million after 3 years, a level predetermined to make a company of 7 principals and supporting staff viable. Our techniques though were validated.</p> <p>LONGER TERM (DECADAL) FORECASTS</p> <p>PDO</p> <p>Given the very consistent multi-decadal cyclical nature of some of these major teleconnections, we can also project what might be ahead for upcoming decades far better than with use of climate models. For example we have been anticipating the flip of the PDO in the late 1990s and 2000s which would after a</p> | |

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| | | | | | | <p>few years cause more La Ninas and reverse the trend of warming with the El Nino rich warm mode from 1979-1998 and indeed temperatures flattened and then post 2002 have trended downward.</p> <p>Dr. Don Easterbrook Dept. of Geology, Western Washington University, Bellingham, WA has projected the return of colder temperatures for the next three decades based on this flip.</p> <p>AMO Dr William Gray and others in the mid 1990s projected an increase in Atlantic Basin hurricanes based on the flip of the AMO from cold to warm. That has verified.</p> <p>We also have, using the ultra-long term solar cycles of 106, 213 years, been anticipating the arrival or long weak cycles, perhaps similar to the Dalton Minimum in the late 1700s and early 1800s.</p> <p>The following is a statistical model forecast by Clilverd et al (2006) utilizing past cycle behaviors.</p> <p>His abstract includes the following: “We use a model for sunspot number using low-frequency solar oscillations, with periods 22, 53, 88, 106, 213, and 420 years modulating the 11-year Schwabe cycle, to predict the peak sunspot number of cycle 24 and for future cycles, including the period around 2100 A.D. We extend the earlier work of Damon and Jirikowic (1992) by adding a further long-period component of 420 years. Typically, the standard deviation between the model and the peak sunspot number in each solar cycle from 1750 to 1970 is ± 34. The peak sunspot prediction for cycles 21, 22, and 23 agree with the observed sunspot activity levels within the error estimate. Our peak sunspot prediction for cycle 24 is significantly smaller than cycle 23, with peak sunspot numbers predicted to be 42 ± 34.”</p> <p>So far with the solar minimum not yet in sight (12.4 years after th last minimum), projections that the current cycle 23 will at least approach 13 years in length and be similar to cycle #4 in the late 1700s which also followed two short and spiky cycles lends some credence to this forecast. The period was an unusually cold</p> | |


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| | | | | | <p>one – the Dickens Age.</p> <p>SUMMARY The past is the only operationally useful guide to the future. There is nothing extraordinary about the current time since we are able to make correct forecasts using the past. Models are even in the words of famous modellers just tools and do not rise to the important task.</p> <p>CORRECTION REQUESTED Key finding #9 needs to be deleted or altered to reflect reality.</p> <p>“9. Climate models have failed forecasting global or certainly regional climate. Past cycles and oscillations have been proven useful in predicting future climate states on a seasonal and long term basis.</p> <ul style="list-style-type: none"> • Additional research into these promising approaches must be made so that we may accurately predict future climate states and adaption measures and make wise policy decisions. • Long-lived infrastructure, from power plants to roads and buildings, must be designed and built taking climate change into account. • Long term planning will have to continually incorporate the latest information, as climate will be ever changing, requiring adaptation strategies to constantly evolve. <p>D’Aleo, Fellow of the AMS, CCM, WSI, Icecap</p> | |
| P | Medlock | 7 | 4 | | <p>Item 9 Add a bullet for development decisions and standards that are based on engineering and planning models that do not incorporate climate change. Existing development may have been placed in harm’s way, and future development must be sited higher and farther back from water resources than previously allowed.</p> <p>Medlock, ASFPM</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Stouffer | 7 | 4 | | <p>Item 9, Bullet 2 must be designed – Tone. Change “must” to “should”</p> <p>Stouffer, GFDL/NOAA</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Goklany | 7 | 5 | | <p>Contrary to its claim, this is a remarkable non-Finding. What’s most remarkable about this is that the CCSP exercise seems to have not brought any added value to our prior store of knowledge. It didn’t require the expenditure of billions of dollars to come up with this finding. Exactly the same finding could have been</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |

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| | | | | | <p>made, and has been, even before the CCSP was conceived. Each of the bullets is trivial. Without going through each of these, I'll just use the last bullet as an example. This bullet states: "There are limits to adaptation..." [Is 2 +2 = 4?] Of course, there are limits to adaptation. Everyone knows that, and has always known that. Is this all the insight we get after having spent millions of dollars on this exercise? How about something specific, such as: what factors govern the limits of adaptation, are these limits all the same for every sector and region; how do they vary with the rate and/or magnitude of climatic change, and with economic and technological development; would the limit to adaptation be exceeded if temperature in an area changes by 5°C by 2100, how about if the change was 3°, instead? None of these are addressed, which only reinforces the point that this report is not a scientific assessment.</p> <p>As noted in Comment 2, above, without an analysis of the costs and benefits of mitigation and adaptation, there is nothing that this document can say about these response strategies that goes beyond speculation.</p> <p>Goklany</p> | |
| P | National Wildlife Federation | 7 | 5 | | <p>Item 10 The language makes it sound like "abandonment" is automatically bad. This is not necessarily the case – there will be places where abandonment is in the best interest of both the public and natural habitat (e.g., reduced risks to property and increased resilience in terms of habitat buffers).</p> <p>National Wildlife Federation</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Webster, R. | 7 | 6 | | <p>Bullet 1 This bullet only postulates warming. The effects of cooling should be given similar consideration since there is no validated scientific basis upon which to postulate whether warming or cooling will occur beyond several decades in the future. While there is historic natural climate variability linked to solar variability, and ENSO, PDO, ADO, NAO phase changes that allow certain generalizations to be made about near term decadal climate variability, beyond the expectation that future climate will experience similar decadal changes to varying degrees, there is no validated scientific basis upon which to project anything more specific. With more research, new understanding of the driving forces of natural climate variability (e.g., solar variability and all that implies in terms of both incident radiation, magnetic flux, cosmic radiation, cloud formation, ocean and atmospheric circulation phase shift causes, etc.) may provide better insight into future climate variations. Until that</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |

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| | | | | | time, there is little we can do but be prepared for whatever nature deals us. This should be the thrust of this report, not some completely speculative repetition of a dated theory of significant human-caused climate change that both real world observation and validated scientific research have shown to be vastly overstated and based on deeply flawed assumptions. -- Webster, (Retired DA/DoD) | |
| P | Webster, R. | 7 | 6 | | Bullet 2 Suggest changing to read: “Growing populations and changing precipitation patterns would increase competition among urban, industrial, agricultural, and natural ecosystem water needs in regions should overall water supplies decline.” Current wording presumes warming that is unjustified by validated scientific research. -- Webster, (Retired DA/DoD) | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Webster, R. | 7 | 7 | | Bullet 3 Suggest changing to read: “Trade-offs will be necessary. For example, possible water scarcity in some regions may force hard choices about the allocation of water for growing food, producing electricity, providing for urban uses, and protecting ecosystems.” Current wording presumes warming that is purely speculative. -- Webster, (Retired DA/DoD) | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Webster, R. | 7 | 9 | 1 | This statement is absurd. Historic climate and weather patterns have never been an “adequate guide to the future.” The presumption that they ever were suggests a gross ignorance of historical climate and weather variability. Consider replacing it in its entirety with: “Evaluating the risks associated with climate change.” It has never been wise to assume stable climate or weather patterns. Expansion of risk assessments is the best response to dealing with such unknowns. -- Webster, (Retired DA/DoD) | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Webster, R. | 7 | 9 | | Bullet 1 Suggest changing to read: “Prudent planning to provide water, energy, transportation, and other services should never assume future climate will be like the past; plan for changes known to have occurred in climate history with consideration for the risk of extreme change.” Current wording suggests past assumptions that presumed a stable climate were reasonable. -- Webster, (Retired DA/DoD) | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Webster, R. | 7 | 10 | 1 | Eliminate “... reducing emissions to limit future warming and ...” to be accurate. As it stands, this statement is entirely speculative and dishonest. There is no evidence in any validated scientific inquiry that demonstrates a discernible impact on climate from human emissions of any heat-trapping gases. Consequently, to suggest that | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |

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| | | | | | reducing such emissions would provide a discernible impact on future climate is pure folly as well as completely inappropriate, misleading and dishonest. -- Webster, (Retired DA/DoD) | |
| P | Webster, R. | 7 | 10 | | Bullet 1 Eliminate entirely. There is no valid scientific basis for making such a statement. -- Webster, (Retired DA/DoD) | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Webster, R. | 7 | 10 | | Bullet 2 (Eliminate "...under high emissions scenarios ..." There is no valid scientific basis for including that phrase, it is purely speculative.) Webster, (Retired DA/DoD) | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Goklany | 8 | | | <p>First, there is nothing in the text that tells us what is the magnitude or rate of climatic change assumed for the impacts specified on these pages. Are we talking about a 0.5°, 5.0°, or 50° change here? And is the change assumed to occur over 10 years, 100 years or longer? What is assumed about adaptive capacity? Without any of this, a lay reader may conclude (erroneously) that the listed impacts would occur regardless of the magnitude or rate of change, or adaptive capacity.</p> <p>Second, in the absence of any information as to the rate or magnitude of climatic change referred to on these pages, one must assume that, unless qualified, the statements listed on these pages apply to any change regardless of magnitude or rate. But on page 15, the Executive Summary states that: "Statements that are not qualified with such terms are deemed virtually certain." In light of this, the statements on these pages are absurd.</p> <p>Third, the text emphasizes the negatives, which seems to be a consequence of publication bias toward detrimental consequences of climate change. See Comment 3, above. In an attempt to redress this lack of balance, I'll offer below a number of potentially countervailing impacts.</p> <ul style="list-style-type: none"> ▪ All Sectors, Society. It should be noted that the United States' economic growth and technological prowess has increased its adaptive capacity in general, which if mobilized properly would help it cope with climate change and its impacts. See Comments 12 and 13, above. ▪ Society, Bullet 2. Please add that this indicates the importance of economic development and greater choice for vulnerable populations, in particular. ▪ Society, Bullet 3. Please also add that while climate change may foreclose some recreational options, it may also open up other recreational | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |

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| | | | | | | <p>opportunities. For example, skiing may be replaced by hiking which, incidentally, is a much more egalitarian activity, or bird watching. Or, if climate/weather keeps people from the outdoors, they'll do something else indoors. I'm a little skeptical that recreation will be much affected in the aggregate, because if people don't go to one place to do one thing they'll go to another and do something else, because there are numerous substitution opportunities. If the studies that were relied upon didn't seriously examine substitution opportunities, I would recommend disregarding them as being poorly conceived.</p> <ul style="list-style-type: none"> ▪ Society, Bullet 4. It should also be noted that cities also have unique strengths when it comes to coping with climate change. For example, it might be easier and cheaper to provide public health and other community services that may help populations cope in urban areas rather than in rural areas (e.g., access to hospitals, shelter during extreme heat or cold, etc.) ▪ Human Health. Despite their shortcomings (see Comment 3), the Abstract or the Executive Summary of SAP 4.6 (on Human Health) are more even handed summaries than what's in this section. I recommend using the following sentences from that Abstract of SAP 4.6 as a new bullet on page 8 in lieu of the current last bullet: "The United States is certainly capable of adapting to the collective impacts of climate change. However, there will still be certain individuals and locations where the adaptive capacity is less and these individuals and their communities will be disproportionately impacted by climate change." ▪ Human Health, Bullet 1. The claim that decreases in cold-related impacts would be small seems to contradict the Executive Summary of SAP 4.6 (on Human Health), where it notes explicitly that "Few studies have attempted to link the epidemiological findings to climate scenarios for the United States, and studies that have done so have focused on the effects of changes in average temperature, with results dependent on climate scenarios and assumptions of future adaptation. Moreover, many factors contribute to winter mortality, making highly uncertain how climate change could affect mortality. No projections have been published for the U.S. that incorporate critical factors, such as the influence of influenza outbreaks." (Emphasis added). ▪ Human Health, Bullet 2. Please note here that despite any warming over the past several decades, air quality is much better today than it's been in | |

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|  | | | | | | <p>decades, and that there is no reason to believe that EPA will allow it to deteriorate once again.</p> <ul style="list-style-type: none"> ▪ Energy, Bullet 1. Add that wintertime energy demand will be reduced because of lower heating load. ▪ Energy, Bullet 3. Add at the end of the sentence: “as would any carbon sequestration.” ▪ Energy, Bullet 5. It should be noted that climate change should also affect wind and solar, and not necessarily for the better. ▪ Water Resources, New Bullet. It should be noted that the US’s ability to adapt is high considering its wealth, human capital and technological knowhow, and should increase farther if the socioeconomic scenarios used to project future emissions and climate changes are to be believed (Goklany 2007a, 2007b). ▪ Water Resources, new Bullet. It should be noted that higher CO2 concentrations would increase the efficiency of water use by crops and vegetation. This is important because agriculture is the major consumptive user of water. ▪ Water Resources, last Bullet. In light of paleo evidence, it is arguable whether the past century ever was a good guide. Reword this bullet to note that in light of paleo evidence about natural variability and climate change, the past century is a poor guide for long term decisions on water management. ▪ Agriculture and Land Resources, new bullet. The text fails to note that higher CO2 concentrations would increase crop yields and make water use by crops and vegetation more efficient helping augment adaptive capacity over what it otherwise would be. <p>References Goklany, I.M. 2007a. “Integrated strategies to reduce vulnerability and advance adaptation, mitigation, and sustainable development,” Mitigation and Adaptation Strategies for Global Change, DOI 10.1007/s11027-007-9098-1. Goklany, I.M. 2007b. “Is a Richer-but-warmer World Better than Poorer-but-cooler Worlds?” Energy & Environment 18: 1023-1048. Goklany</p> | |
| | P | Honeycutt | 8 | | | <p>[The rest of the Executive Summary and report proceeds in much the same way as the original bullet points. In general, the alarmism should be toned down, and only claims for which there is credible, empirical evidence should be included.</p> | |

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| | | | | | In particular, this excludes “evidence” from computer simulations, as opposed to actual, measured data that have been processed according to proper statistical techniques.] Honeycutt | |
| P | Knappenberger | 8 | | | Once the recommendations are made as per my detailed comments on the Chapters “Society” and “Human Health” the majority of these bulleted items will have to be withdrawn or reworked. Without such corrections, the summary statements fail to meet the authors’ claim of representing the “the best available science” (p. 14) and otherwise violates applicable objectivity requirements. Knappenberger, New Hope Environmental Services | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Pogue | 8 | 1 | 1 | The first sentences should mention other critical facilities, such as hospitals and sewage and water treatment facilities, in need of higher design standards, perhaps at or above the 500-year flood level. When rebuilding facilities, they should not be located near the coast or in a FEMA Zone V or Zone AE if at all possible. This would provide a more sustainable approach for rebuilt as well as new construction. Storm surge, coastal inundation, and sea level rise would ultimately force these communities to repair these facilities again, on top of previous FEMA disaster assistance. Pogue, CFM - ASFPM Coastal Committee Co-Chair | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Stouffer | 8 | 1 | | Bullet 3 Have we assessed the things “Americans hold dear”? Tone. Reword Stouffer, GFDL/NOAA | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Webster, R. | 8 | 2 | | Bullet 1 Inaccurate as written. Historically, humankind has found cold climate regimes far more deadly than warm regimes. Comparing the human health stress during the Medieval Warm Period with that experienced during the Little Ice Age clearly reveals humanity does far better in milder climate than in colder climate. While some diseases may increase with warming, cold leads to greater human stress and susceptibility to disease. Colder climate would have a severely negative impact on the food supply. Suggest changing to read: “Extreme variability of climate, either warming or cooling, can have significant negative health impacts with increased disease, physical stress, and reductions in food supplies being some of the effects on humankind.” -- Webster, (Retired DA/DoD) | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Webster, R. | 8 | 2 | | Bullet 2 Only accurate if “... are projected to ...” is replaced with “... could ...”. -- | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily |

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| | | | | | Webster, (Retired DA/DoD) | referenced so it is clearer that it is based on sound science. |
| P | Webster, R. | 8 | 2 | | Bullet 3 Only accurate if "... are projected to ..." is replaced with "... could ...". -- Webster, (Retired DA/DoD) | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Webster, R. | 8 | 2 | | Bullet 4 Only accurate if "... are projected to ..." is replaced with "... could ...". -- Webster, (Retired DA/DoD) | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Webster, R. | 8 | 2 | | Bullet 5 Only accurate if "... with climate change projected ..." is replaced with "... and climate change could ...". -- Webster, (Retired DA/DoD) | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Stouffer | 8 | 3 | | Bullet 3 Rising temperatures decrease power plant efficiency. How? Is this a major factor? Stouffer, GFDL/NOAA | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Stouffer | 8 | 3 | | Bullet 3 vulnerable to sea level rise – How large? How soon? Are the projected IPCC SLR large enough to make the systems vulnerable? Balance Stouffer, GFDL/NOAA | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Webster, R. | 8 | 3 | | Bullet 1 Only accurate if "Warming ..." is replaced with "Climate change ..." and "... air conditioning ..." is replaced with "... air conditioning or heating ...". -- Webster, (Retired DA/DoD) | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Webster, R. | 8 | 3 | | Bullet 3 Only accurate if "... efficiency." is replaced with "efficiency; cooling temperatures impact extraction/refining/producing/transportation of fuels for power plants." Either warming or cooling can occur in future climate. It would be foolish to assume only warming and ignore the risks associated with cooling, which is just as likely according to historic climate evidence. -- Webster, (Retired DA/DoD) | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Webster, R. | 8 | 3 | | Bullet 4 Only accurate if "...vulnerable to sea-level rise and extreme ..." is replaced with "... vulnerable to both sea-level rise or fall and possible extreme ...". Either warming or cooling can occur in future climate. It would be foolish to assume only warming and ignore the risks associated with cooling, which is just as likely according to historic evidence. -- Webster, (Retired DA/DoD) | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |

Unified Synthesis Product: Global Climate Change Impacts in the United States (1st Draft)

PUBLIC COMMENTS

July/August 2008 Reviewer Comments and Responses (Final Revision, 1/12/09)

Comment Type: BR – Blue Ribbon Panel, CC – Climate Communicators, G – U.S. Government, P – Public

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| P | Stouffer | 8 | 4 | | Bullet 3 cause pavement and track damage – Change “cause” to “increase”. This occurs in the present climate. Tone. Stouffer, GFDL/NOAA | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Stouffer | 8 | 4 | | Bullet 3 What is the net of the cost/benefit of the projected changes? Balance. Stouffer, GFDL/NOAA | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | URS | 8 | 4 | | The first sentences should mention other critical facilities, such as hospitals and sewage and water treatment facilities, in need of higher design standards, perhaps at or above the 500-year flood level. When rebuilding facilities, they should not be located near the coast or in a FEMA Zone V or Zone AE if at all possible. This would provide a more sustainable approach for rebuilt as well as new construction. Storm surge, coastal inundation, and sea level rise would ultimately force these communities to repair these facilities again, on top of previous FEMA disaster assistance. URS | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Webster, R. | 8 | 4 | | Bullet 2 The assumption that observed increases in heavy downpours in the U.S. reflects a global phenomenon related to human-caused warming has not been proven. This is purely speculative and not supportable by validated scientific research. If there are more extreme downpours related to either warming or cooling, disruptions will occur. Suggested change: “Climate shift could bring about an increase in downpours, blizzards, and other extreme events that would cause disruptions and delays in air, rail, river, lake and road transportation.” An unjustifiable bias toward warming is pervasive throughout this report and serves to severely undermine its credibility. -- Webster, (Retired DA/DoD) | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Webster, R. | 8 | 4 | | Bullet 3 Only warming is considered. Accurate if rewritten: “Extreme warming could adversely affect pavement and cause track damage. Extreme cooling could adversely affect moveable bridges, switch operation, and other railroad and harbor operations.” -- Webster, (Retired DA/DoD) | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Webster, R. | 8 | 4 | | Bullet 4 This bullet should be entirely stricken as it does not reflect the consensus of hurricane forecast experts. Indeed, the consensus belief is that there would be fewer | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |

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| | | | | | hurricanes in a warming climate since the temperature differential between the poles and tropics would decrease and it is this differential that drives the development and intensity of hurricanes. There is some speculation that fewer storms might produce more intense storms, but this view is still speculative and has not been validated by adequate scientific research. Cooling might diminish hurricane frequency and intensity, but increase the intensity and/or frequency of major winter coastal storms and blizzards. -- Webster, (Retired DA/DoD) | |
| P | Webster, R. | 8 | 4 | | Bullet 5 This bullet omits the effects of cooling climate. To be an honest, objective statement, it needs to be rewritten to preface the current material with “In the event of climate warming, ...” and a similar warning must be included concerning the effects of climate cooling, e.g., less navigable sea due to sea-ice expansion and persistence. -- Webster, (Retired DA/DoD) | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Webster, R. | 9 | 1 | | Bullet 4 There is no validated scientific research that demonstrates future climate during the 21st century will be significantly different from that which was experienced during the 20th century or even the 19th century. While the ongoing slight linear upward trend in global temperatures might well continue, the modest degree of such warming argues against any serious consequences if this trend continues. Projections of computer models that ignore natural climate change forces or inadequately represent them and which are based on assumptions of high climate warming sensitivity to increased atmospheric CO2 and which fail to adequately model cloud formation, clouds, and precipitation and the impact of cloud formation, convection and advection in the regulation of atmospheric temperatures are essentially worthless. IPCC projections that are being taken as valid by this draft report are based on assumptions and speculations that severely diminish the value of the last IPCC Summary Report (examples: The Missing Greenhouse Signature, Dr David Evans, david.evans@sciencespeak.com , 21 July 2008; and, “Climate Sensitivity Reconsidered”, Christopher Monckton, July 2008, APS newsletter, Physics & Society). The IPCC models have never been validated because they cannot be. This is the case for the simple reason that known climate change science is inadequately understood and consequently cannot be modeled until it is better understood. The inability to explain or predict natural climate variability makes it impossible to discern a human-caused effect on climate. Even if climate change | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |

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| | | | | | | <p>could be modeled, sufficient data is not available to accurately drive such a model, nor is such data ever likely to be available to accurately drive a proper climate change model (The Deniers, Lawrence Solomon, “Chapter Eight, Models and the Limits of Predictability” with contributions by Hendrik Tennekes, Freeman Dyson, Antonino Zichichi, David Bromwich, et al., pp 109-132, 2008). This bullet should be stricken as purely speculative and meaningless in the context of validated scientific knowledge. -- Webster, (Retired DA/DoD)</p> | |
| | P | Stouffer | 9 | 2 | | <p>Bullet 7 This seems counter-intuitive to me. One would think that the native deserts plants would be better adjusted to desert conditions than invasive species. Is this point correct? Stouffer, GFDL/NOAA</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |
| | P | Goklany | 10 | | | <p>These suffer from similar problems as Pages 8-9. First, there is nothing in the text that tells us what is the magnitude or rate of climatic change assumed for the impacts specified on these pages. Are we talking about a 0.5°, 5.0°, or 50° change here? And is the change assumed to occur over 10 years, 100 years or longer? What is assumed about adaptive capacity? Without any of this information, a lay reader may conclude (erroneously) that the listed impacts would occur regardless of the magnitude or rate of change, or adaptive capacity.</p> <p>Second, in the absence of any information as to the rate or magnitude of climatic change referred to on these pages, one must assume that, unless qualified, the statements listed on these pages apply to any change regardless of magnitude or rate. But on page 13, the Executive Summary states that: “Statements that are not qualified with such terms are deemed virtually certain.” But it is absurd to think that the statements on pages 10-11 are “virtually certain” regardless of the magnitude, timing and rate of climatic change.</p> <p>Third, the focus here, as on pp. 8-9, is apparently on cataloguing negative impacts. What’s remarkable is that virtually every impact listed is negative, even in Alaska (more on this below). Positive impacts should also be listed. These include reduced cold, lower mortality and morbidity from cold and extreme cold, higher agricultural and forest productivity, etc. There should be a discussion of current and future adaptive capacity for each the regions. Also, notably, the non-</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |

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| | | | | | warming effect of higher CO2 levels is only mentioned in the context of higher CO2 concentrations in oceans, but not in the context of higher crop yields or increased water use efficiency. Both of the latter are important, and just as, if not more, likely to transpire. All this ought to be redressed. For other examples and caveats, see above comments on pp. 8-9. Goklany | |
| P | Stouffer | 10 | Gen | | What is the ordering of the regions? Why not go geographically around the US? Stouffer, GFDL/NOAA | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Webster, R. | 10 | | | This entire section is based upon the shaky presumption, based entirely on the misuse of global climate simulations, that significant climate warming will develop over the 21st century. Such simulations can only be used to provide relative measures of impact when the underlying science is well understood and adequate data available to drive the simulation with a meaningful degree of confidence in what is produced. Instead, relative measures are taken as absolute predictions (a gross misuse of such simulations). Further, the underlying assumptions driving the models are shaky at best and unsupported by the weight of current research and observational evidence. There is no validated scientific research to support the contention of this part of the draft report. Indeed, there is strong evidence to the contrary, i.e., that substantial cooling is likely during the greater portion of the first half of the 21st century (The Deniers, Lawrence Solomon, “Chapter Eleven, Cycles Within Cycles” with contributions by Habibullo Abdusamatov, George Kukla, Rhodes Fairbridge, et al., pp 161-175, 2008). Consequently, this section should be rewritten to address the impacts of both warming and cooling climate. -- Webster, (Retired DA/DoD) | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Stouffer | 10 | 1 | | Bullet 5 SLR – Time scale? Stouffer, GFDL/NOAA | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Kruk | 10 | 2 | | Bullet 2 header should be replaced with: “Decreased freshwater availability will impact the economy as well as natural systems.” Kruk, NCDC | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Kruk | 10 | 2 | | Bullet 3 header should be replaced with: “Accelerated sea-level rise and increased tropical cyclone frequency and intensity will have serious impacts.” Kruk, NCDC | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |

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| P | Goklany | 10 | 3 | | <p>So as not to be repetitious, I'll just focus on the paragraph devoted to Alaska. It may come as a surprise to the authors of this report, but among the major reasons why Alaska has a relatively low population density are (a) an inhospitably cold climate and (b) the cost of living, which is inflated by limited commerce and shipping to that area. Warming may also favor agriculture and forestry, and increase production of specialty crops. So a warmer climate would likely increase Alaska's population, energy use may go down, and if the Arctic were to become navigable year-round, Alaska could have more industry and commerce and cost of living may drop. Also, let's not forget that more people die in winter than in summer, particularly in northern climates (see Comment 3, above). None of this is mentioned. In any case, these are possibilities and, given the rather general tenor of the Executive Summary, either the possibilities should be explicitly noted or it should be explicitly noted that there is insufficient analysis of these matters and that might be due to publication and reporting bias.</p> <p>Goklany</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |
| P | Kruk | 10 | 3 | | <p>Bullet 5 header should be replaced with: "Loss of sea ice by coastal storms increases the risks to villages and fishing fleets."</p> <p>Kruk, NCDC</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |
| P | Stouffer | 10 | 3 | | <p>Bullet 5 coastal storms – Mention the melting sea ice and potentially stronger storms making the problems</p> <p>Stouffer, GFDL/NOAA</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |
| P | Stouffer | 10 | 4 | | <p>Bullet 1 availability of freshwater – Why? Changes in P or salt water encroachment?</p> <p>Stouffer, GFDL/NOAA</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |
| P | Stouffer | 10 | 5 | | <p>Bullet 4 Climate change - a net plus or minus?</p> <p>Stouffer, GFDL/NOAA</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |
| P | Herman | 11 | | | <p>However, it is generally agreed by modelers that climate models cannot predict regional climate, nor were they intended to do so. The following link presents references to a statement by Dr. Trenberth to this effect.</p> <p>http://blogs.nature.com/climatefeedback/2007/06/predictions_of_climate.html</p> <p>Regional climate change has been a subject of considerable research effort in recent</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |

Unified Synthesis Product: Global Climate Change Impacts in the United States (1st Draft)

PUBLIC COMMENTS

July/August 2008 Reviewer Comments and Responses (Final Revision, 1/12/09)

Comment Type: BR – Blue Ribbon Panel, CC – Climate Communicators, G – U.S. Government, P – Public

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| | | | | | years. Some semblance of the uncertainty that exists in this area of research should be included in the discussions Herman, University of Arizona | |
| P | Stouffer | 11 | 2 | | Bullet 3 SLR – Time scale? Stouffer, GFDL/NOAA | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Stouffer | 11 | 4 | | Bullet 1 SLR – Time scale? Stouffer, GFDL/NOAA | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Stouffer | 11 | 4 | | Bullet 5 surprising – Why is it surprising? Stouffer, GFDL/NOAA | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Carlin | 12 | | 5 | The statement that the report will not discuss geoengineering options further than to say that any unintended consequences must be carefully evaluated negates many of your recommendations as to what should be done contained in the draft. For example, because stratospheric geo could be used to alter global temperatures very rapidly, the statement in your draft that there is an urgent need to reduce GHG emissions does not follow since geo could be used if and when really needed to control impending adverse climate changes in the event that such changes should ever appear to be very adverse and imminent. For further explanation of this and the many other problems with trying to use reductions in GHG emissions to avoid climate change problems (which also need to be explained in your report) see my published paper on the subject available at http://carlineconomics.googlepages.com/CarlinWhy.pdf . Yet there is no real discussion of why there is any urgency given the proven capability of altering temperatures through stratospheric geoengineering—just the flat assertion that GHG emissions reduction is “urgent.” Dismissing geo as not worth discussion except to emphasize its possible unintended consequences undermines the credibility of this and many of your other major recommendations. Carlin, Public Citizen | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Goklany | 12 | | | Discussion of Adaptation. The discussion of adaptation is very narrowly conceived and seems to be based on a deterministic paradigm that we know (or shall know) the consequences of climate change in time and place and we’ll plan adaptations around that (perhaps via central planning). This is conveyed by language such as, “adaptation can be thought of as improved planning, using the best available information about future climatic conditions... (page 12, 4th paragraph), “unless | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |

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| | | | | | | <p>we explicitly plan for climate change ...” (page 12, last paragraph, 1st sentence), and “adaptation responses have tended to be decentralized and uncoordinated with uneven results” (page 13, 4th paragraph).</p> <p>However, there are four other complementary approaches, which may be more successful and efficient than the one discussed here, considering the uncertainties surrounding modeling not only climate changes but its biophysical and socioeconomic impacts in both time and space. First, there are adaptation policies that don’t necessarily depend on the precise information or output of modeling studies (which are necessarily uncertain). For example, we don’t know precisely how much warming will occur in any specific location, but we are confident that there will be warming. Therefore, we should augment research on improving yields under warmer conditions. Similarly, while we are unsure about the amount of both warming and precipitation at any spot at any given time in the future, we are confident that CO2 concentrations will be higher. Hence it would make sense to augment research on harnessing atmospheric CO2 more efficiently in photosynthesis. This could make higher yields possible in the future. Yet another example of a strategy that doesn’t depend on uncertain modeling information would be the institution of tradable water rights, as a method of making water resource use (and management) more resilient and adaptable (Goklany 2003, 2005, 2007a).</p> <p>Second, we could employ the adaptive management approach, which essentially allows for some trial-and-error in the face of uncertainty because it recognizes that there are inherent uncertainties in both projecting environmental changes into the future and developing appropriate solutions.</p> <p>Third, we could reduce current vulnerabilities to existing problems that may be exacerbated by climate change (Goklany 2000, 2003, 2007a).</p> <p>Finally, we could broadly increase adaptive capacity (Goklany 1995, 2005, 2007a, 2008). The latter could be accomplished by increasing society’s economic resources, human capital and technological capabilities. That way, no matter what the impacts turn out to be, society will be better positioned to deal with them. As a real life example as to how this works consider how the world dealt with HIV/AIDS.</p> | |

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| | | | | | | <p>When HIV/AIDS appeared on the scene, it was totally unanticipated. We couldn't have even planned for it, because it was a totally unknown disease. It was, for practical purposes, a death sentence for those who contracted it. It took the wealth and human capital of the world's most developed countries to launch a response. Out of this came an understanding of the disease and a variety of therapies were formulated. Once among the top ten killers in the US, today HIV ranks nineteenth (counting all cancers and cardiovascular diseases as single categories). From 1995 to 2004, age-adjusted death rates due to HIV declined by over 70 percent (USBC 2008). Although it's not been conquered, the rich countries have figured out how to cope with it, and even developing countries are benefiting from the technologies that the former were able to develop because they had the necessary economic and human resources, and institutions at their disposal. That is, they had the requisite adaptive capacity.</p> <p>As yet another example, consider that most people have degrees in fields or specialties that may or may not have any relationship to their existing jobs. Yet most perform quite well on their jobs. This is possible because one of the benefits of a college education is that it gives people the requisite adaptive capacity (via greater human capital) to deal with jobs even as technologies and economies evolve.</p> <p>The importance of ensuring that people have the means and ability to react on their own, that is, they possess the adaptive capacity to respond, can also be seen in what transpired during Hurricane Katrina. People who had the means (e.g., had access to automobiles or were otherwise sufficiently wealthy to mobilize their own resources) and were willing and able to use them, didn't have to rely on public transportation. What this doesn't mean is that one should dispense with public transportation, but one ought to recognize that sometimes it's best for people to be masters of their own fates. This also applies to populations.</p> <p>Regarding centralized versus decentralized approaches, it should be noted that if centralized approaches fail, they fail big, whereas if decentralized approaches fail, the losses can generally be less extensive, and therefore more easily managed from society's point of view. This is one of the most important lessons of the 20th century. Decentralized approaches, such as those embodied in the</p> | |

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| | | | | | <p>free market system, have generally been far more successful than centralized approaches (compare for example, South v N Korea, China before and after market liberalization, East v West Germany) in advancing human well-being.</p> <p>That failure of centralized approaches can be exceedingly disastrous is also hinted by the events surrounding Hurricane Katrina. The real disaster there was the result of the failure of the levee, rather than the Hurricane itself. And nothing embodies central planning better than a levee of that kind.</p> <p>References Goklany, I.M. 1995. "Strategies to Enhance Adaptability: Technological Change, Economic Growth and Free Trade." Climatic Change 30: 427-449. Goklany, I.M. 2000. "Potential consequences of increasing atmospheric CO2 concentration compared to other environmental problems." Technology, 7S, 189-213. Goklany, I.M. 2003. "Relative Contributions of Global Warming to Various Climate Sensitive Risks, and Their Implications for Adaptation and Mitigation," Energy & Environment 14: 797-822. Goklany, I.M. 2005. "A climate policy for the short and medium term: stabilization or adaptation?" Energy & Environment 16: 667-680. Goklany, I.M. 2007a. "Integrated strategies to reduce vulnerability and advance adaptation, mitigation, and sustainable development," Mitigation and Adaptation Strategies for Global Change, DOI 10.1007/s11027-007-9098-1. Goklany, I.M. 2008. "Adaptive Management of Climate Change Risks," forthcoming in A Breath of Fresh Air. Toronto: The Fraser Institute. Preprint available at http://www.fraserinstitute.org/commerce.web/product_files/AdaptiveManagementClimateChange.pdf</p> <p>Goklany</p> | |
| P | Webster, R. | 12 | | | <p>This entire section is based upon the shaky presumption that significant climate warming will develop over the 21st century. There is no validated scientific research to support such a contention. (see previous comment) Consequently, this section should be rewritten to address the response strategies for both warming and cooling climate. -- Webster, (Retired DA/DoD)</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |
| P | Goklany | 12 | 1 | | <p>Please modify this paragraph to note that unintended consequences should be</p> | <p>Thank you. The Executive Summary has undergone major revision</p> |

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| | | | | | evaluated not only for geoengineering options but all other options – whether they are classified as mitigation or adaptation. It should also be noted that there should be an evaluation of the costs and benefits (in order to identify which actions are the most cost-beneficial), and the opportunity costs as well. Goklany | based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Haapala | 12 | 1 | 1 | “Most scientific research has focused on understanding the nature, causes, and impacts of climate change...” (Emphasis added). By its definition of scope over the past fifty years, the USP contains no rigorous study of the causes of climate change prior to 1950. It offers no explanation of the natural forces that caused the Holocene Climate Optimum, the Medieval Warm Period and the Little Ice Age. Reference to nature and causes other than possible human causes must be dropped. Without such a correction the USP fails to meet the authors’ claim of representing the “best available science” (p.14) and the “best available evidence” (p.15) as well as violates standards of objectivity. Haapala, NIPCC | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Pogue | 12 | 1 | | Add to second paragraph, “what will be needed is a variety of approaches to respond to the human-induced problem of climate change.” Pogue, CFM - ASFPM Coastal Committee Co-Chair | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Stouffer | 12 | 1 | 5 | Add idea of some amount of climate changes all ready committed. Stouffer, GFDL/NOAA | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | URS | 12 | 1 | | Add to second paragraph, “what will be needed is a variety of approaches to respond to the human-induced problem of climate change.” URS | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Frumhoff | 12 | 2 | | “Comparing impacts for low and high emissions scenarios” Strongly suggest to use “lower” and “higher” rather than “low and high” here and throughout the report and associated graphics. Current use is highly inconsistent throughout, and “lower” and “higher” will more appropriately highlight these as relative, rather than absolute terms. Frumhoff, Union of Concerned Scientists | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Pogue | 12 | 2 | | The concept of mitigation (per FEMA’s definition: “actions that can be taken to reduce damages from natural hazards in the future”) needs to be included here. There is considerable confusion about this term. In the discipline of emergency management, floodplain management, and wetlands and watershed management, “mitigation” is a very well known and practiced term. It is also instituted by FEMA’s Stafford Act through the Disaster Mitigation Act of 2000, in which all | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |

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| | | | | | 50 States and territories, as well as all communities throughout this country, are mandated to prepare and implement hazard mitigation plans if they are to receive any public disaster assistance in the future. The objective is to identify all natural hazards that pose a risk to their communities, and identify mitigation measures to reduce those threats and vulnerabilities that will cause future damage from storms and other natural hazards. This overlaps or duplicates the objectives of “adaptation,” except that “mitigation” is backed by several Federal agencies and five Federal grant programs (the Hazard Mitigation Grant Program [HMGP], Severe Repetitive Loss Program [SRL], Repetitive Flood Claims Program [SRL], the Flood Mitigation Grants Program [FMA], and the Pre-Disaster Mitigation Grants Program [PDM]). The objective of all of these programs is to minimize damages from flooding and for some programs, other natural hazards. This is particularly true for losses caused by coastal inundation, sea level rise, and other impacts caused by climate change. Mitigation plans are constantly being updated, and now must account for changes in sea level rise. There should be mention of FEMA’s institutionalization and practice of mitigation as one of the four critical cycles of emergency management. Pogue, CFM - ASFPM Coastal Committee Co-Chair | |
| P | URS | 12 | 2 | | The concept of mitigation (per FEMA’s definition: “actions that can be taken to reduce damages from natural hazards in the future”) needs to be included here. There is considerable confusion about this term. In the discipline of emergency management, floodplain management, and wetlands and watershed management, “mitigation” is a very well known and practiced term. It is also instituted by FEMA’s Stafford Act through the Disaster Mitigation Act of 2000, in which all 50 States and territories, as well as all communities throughout this country, are mandated to prepare and implement hazard mitigation plans if they are to receive any public disaster assistance in the future. The objective is to identify all natural hazards that pose a risk to their communities, and identify mitigation measures to reduce those threats and vulnerabilities that will cause future damage from storms and other natural hazards. This overlaps or duplicates the objectives of “adaptation,” except that “mitigation” is backed by several Federal agencies and five Federal grant programs (the Hazard Mitigation Grant Program [HMGP], Severe Repetitive Loss Program [SRL], Repetitive Flood Claims Program [SRL], the Flood Mitigation Grants Program [FMA], and the Pre-Disaster Mitigation Grants Program [PDM]). The objective of all of these programs is to minimize damages from flooding and for some programs, other | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |

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| | | | | | | <p>natural hazards. This is particularly true for losses caused by coastal inundation, sea level rise, and other impacts caused by climate change. Mitigation plans are constantly being updated, and now must account for changes in sea level rise. There should be mention of FEMA’s institutionalization and practice of mitigation as one of the four critical cycles of emergency management.</p> <p>URS</p> | |
| | P | Pogue | 12 | 4 | | <p>Add another paragraph before paragraph 5. The NFIP already mandates that member communities implement building standards that elevate structures above the base flood elevation; implement building codes to better withstand winds and floods; use the best available information so as to not locate structures or build in special flood hazard areas; and strongly advocates better integrated planning for sustainability, so that States and communities can withstand the potential damages from storm events and recover much more quickly. The NFIP also has a voluntary program, the Community Rating System (CRS), which goes further to motivate communities to “raise the bar” to minimize damages from flooding and sea level rise, coastal inundation, and inland flooding by awarding insured properties discounts on their flood insurance premiums. The NFIP, CRS, and FEMA’s various mitigation grant programs advocate smart planning and design by reducing risk and vulnerability, and should therefore be recognized in this report. Additionally, they are funded programs that are under-utilized.</p> <p>Pogue, CFM - ASFPM Coastal Committee Co-Chair</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |
| | P | URS | 12 | 4 | | <p>Add another paragraph before paragraph 5. The NFIP already mandates that member communities implement building standards that elevate structures above the base flood elevation; implement building codes to better withstand winds and floods; use the best available information so as to not locate structures or build in special flood hazard areas; and strongly advocates better integrated planning for sustainability, so that States and communities can withstand the potential damages from storm events and recover much more quickly. The NFIP also has a voluntary program, the Community Rating System (CRS), which goes further to motivate communities to “raise the bar” to minimize damages from flooding and sea level rise, coastal inundation, and inland flooding by awarding insured properties discounts on their flood insurance premiums. The NFIP, CRS, and FEMA’s various mitigation grant programs advocate smart planning and design by reducing risk and vulnerability, and should therefore be recognized in this report. Additionally, they are funded programs that are under-utilized.</p> <p>URS</p> | <p>Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science.</p> |

Unified Synthesis Product: Global Climate Change Impacts in the United States (1st Draft)

PUBLIC COMMENTS

July/August 2008 Reviewer Comments and Responses (Final Revision, 1/12/09)

Comment Type: BR – Blue Ribbon Panel, CC – Climate Communicators, G – U.S. Government, P – Public

| Type | Reviewer | Page | Para | Line | Specific Comments | Responses |
|------|----------|------|------|------|--|--|
| P | Haapala | 12 | 5 | 1 | <p>“The more we mitigate (reduce emissions), the less climate change we’ll experience and the less severe the impacts will be...” Without evidence, this assertion assumes that an ice age, the dominant climate feature for the past two million years, will never again appear. How does a reduction in emissions mitigate against a future ice age? The assertion is absurd and the entire section must be dropped. Without such a correction the USP fails to meet the authors’ claim of representing the “best available science” (p.14) and the “best available evidence” (p.15) as well as violates standards of objectivity.</p> <p>Haapala, NIPCC</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Stouffer | 12 | 5 | | <p>Bullet 1 Water and sewer systems should not fall under “technological changes”</p> <p>Stouffer, GFDL/NOAA</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Stouffer | 12 | 5 | 1 | <p>Add “in future” after “we’ll experience”.</p> <p>Stouffer, GFDL/NOAA</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Goklany | 12 | 6 | | <p>Last two sentences Please insert a new sentence between the two for both accuracy and to provide appropriate context, so that together they read as follows: “Some communities, states, sectors, and the nation as a whole have a generally high capacity to adapt to projected changes in climate, but adaptive capacity is unequal across the nation. HOWEVER, BECAUSE FUTURE LEVELS OF ECONOMIC AND TECHNOLOGICAL DEVELOPMENT AND HUMAN CAPITAL OUGHT TO BE HIGHER (ACCORDING TO THE SCENARIOS EMPLOYED), FUTURE ADAPTIVE CAPACITY OUGHT TO BE HIGHER TOO. Future adaptation and adaptive capacity will ALSO be influenced by development decisions implemented in the near and long term in various regions within the United States and other countries.”</p> <p>Goklany</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Sherwood | 12 | 6 | | <p>Pgs 12-13: The report should say more here about the uncertainties in our ability to adapt, nicely hinted at in the box on pg. 5. I suggest adding as the second sentence in the last paragraph on pg. 12: "These limits, and the difficulty or expense of simultaneously adapting to multiple climate change consequences, have not yet been well explored through rigorous analysis and are hardly known." The sentence after this should be changed to: "Some communities...ARE THOUGHT TO have a generally high capacity..." If space needs to be saved, the last sentence of this paragraph more or less duplicates</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |

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| | | | | | what is said in the 4th paragraph. Sherwood, Yale University | |
| P | Goklany | 13 | | | <p>Last sentence I recommend modifying this sentence as follows: “Such a holistic view recognizes that the pace and character of future development will influence adaptive capacity, THAT ENHANCED ECONOMIC AND TECHNOLOGICAL DEVELOPMENT AND HUMAN CAPITAL CAN INCREASE BOTH ADAPTIVE AND MITIGATIVE CAPACITIES, and that improving adaptive capacity can, IN TURN, support efforts to achieve economic and environmental objectives, as well as reducing impacts of climate change.”</p> <p>Rationale. The above addition would make for a more holistic (i.e., comprehensive) statement. Additional rationale can be found in Goklany (2007a). Reference Goklany, I.M. 2007a. “Integrated strategies to reduce vulnerability and advance adaptation, mitigation, and sustainable development,” Mitigation and Adaptation Strategies for Global Change, DOI 10.1007/s11027-007-9098-1. Goklany</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Goklany | 13 | 1 | | <p>At the end of this paragraph, add the following: “HOWEVER, IT IS POSSIBLE THAT THE SAME LEVEL OF BENEFITS MAY BE PRODUCED MORE EFFICIENTLY VIA ACTIONS FOCUSED ON DIRECTLY REDUCING THESE OTHER HEALTH RISKS, CREATING JOBS OR OTHER ECONOMIC ACTIVITIES.” (Lomborg 2004; Goklany 2000, 2005, 2007a, 2008).</p> <p>References Goklany, I.M. 2000. “Potential consequences of increasing atmospheric CO2 concentration compared to other environmental problems.” Technology, 7S, 189-213. Goklany, I.M. 2005. “A climate policy for the short and medium term: stabilization or adaptation?” Energy & Environment 16: 667-680. Goklany, I.M. 2007a. “Integrated strategies to reduce vulnerability and advance adaptation, mitigation, and sustainable development,” Mitigation and Adaptation Strategies for Global Change, DOI 10.1007/s11027-007-9098-1. Goklany, I.M. 2008. “Adaptive Management of Climate Change Risks,” forthcoming in A Breath of Fresh Air. Toronto: The Fraser Institute. Preprint available at</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |

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| | | | | | <p>http://www.fraserinstitute.org/commerce.web/product_files/AdaptiveManagementClimateChange.pdf Lomborg. B. 2004. Global Crises, Global Solutions. Cambridge: Cambridge University Press. Goklany</p> | |
| P | Pogue | 13 | 1 | | <p>As a result of the similarities between mitigation and adaptation, examples should be given explaining the differences. The report refers to the different synergies between mitigation and adaptation, but it remains unclear as to what they are. Pogue, CFM - ASFPM Coastal Committee Co-Chair</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | URS | 13 | 1 | | <p>As a result of the similarities between mitigation and adaptation, examples should be given explaining the differences. The report refers to the different synergies between mitigation and adaptation, but it remains unclear as to what they are. URS</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Goklany | 13 | 2 | | <p>Last sentence We need more precision here. What precisely do we mean by “the high end of future scenarios”? What rate and magnitude of temperature change are we talking about? Are there any error bars associated with these estimates? Also change “is unlikely to” with “may not”. Goklany</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Goklany | 13 | 3 | 1 | <p>Modify this to read as follows: “Despite what is widely assumed to be the considerable adaptive capacity of the United States, we have not always succeeded in avoiding significant losses and disruptions, for example, due to extreme weather events, ALTHOUGH IT SHOULD BE NOTED THAT DEATHS AND DEATH RATES DUE TO SUCH EVENTS HAVE DECLINED SUBSTANTIALLY IN RECENT DECADES.” (See Comment 13). Goklany</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Goklany | 13 | 3 | | <p>Last sentence We need more precision here. What precisely do we mean by “the high end of future scenarios”? What rate and magnitude of temperature change are we talking about? Are there any error bars associated with these estimates? Also change “is unlikely to” with “may not”. Goklany</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Zamarra | 13 | 3 | 3 | <p>When has climate ever been stationary? This statement may need re-wording. Zamarra, STG, Inc.</p> | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Frumhoff | 13 | 5 | | <p>“Example of strategies communities can implement to adapt” Why restrict this to</p> | Thank you. The Executive Summary has undergone major revision |


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| | | | | | only “communities” – many important adaptation responses, including some of those listed in bullets below, can be implemented by states, the private sector, and others beyond communities. Suggest to change to “Examples of strategies that can be taken by local communities and others....” Frumhoff, Union of Concerned Scientists | based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Pogue | 13 | 5 | | Regarding the sample strategies communities can implement to adapt to climate change, such as updating levees and water and sewer systems, preserving wetlands, and preventing wetlands loss, which can therefore prevent property damage and loss of life by taking advantage of natural ecosystem services—all are examples of FEMA-driven mitigation grant programs. Pogue, CFM - ASFPM Coastal Committee Co-Chair | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | URS | 13 | 5 | | Regarding the sample strategies communities can implement to adapt to climate change, such as updating levees and water and sewer systems, preserving wetlands, and preventing wetlands loss, which can therefore prevent property damage and loss of life by taking advantage of natural ecosystem services—all are examples of FEMA-driven mitigation grant programs. URS | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Goklany | 13 | 7 | | Last sentence It should also be noted that national policies can inhibit adaptation, and may lead to maladaptation. For example, consider policies on spreading risks from individuals to the broader public, which has been an incentive for individuals to locate in riskier locations (e.g., flood plains, coastal margins, at the side of mountains, etc.). Goklany | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Pogue | 13 | 7 | | Add “While adaptation and mitigation take place at the local scale...” Since 1996 mitigation has been a national strategy implemented and institutionalized by FEMA through grants and regulations, and is meant to be regulated through local government. Mitigation occurs most effectively through local government, where local land use decisions are made. Adaption appears to be a concept which would be most effective on a global scale. Pogue, CFM - ASFPM Coastal Committee Co-Chair | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | URS | 13 | 7 | | Add “While adaptation and mitigation take place at the local scale...” Since 1996 mitigation has been a national strategy implemented and institutionalized by FEMA through grants and regulations, and is meant to be regulated through local government. Mitigation occurs most effectively through local government, where local land use decisions are made. Adaption appears to be a concept which | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |

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| | | | | | would be most effective on a global scale. URS | |
| P | Pogue | 13 | 8 | | Add “Criteria for effective adaptation and mitigation...” Pogue, CFM - ASFPM Coastal Committee Co-Chair | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | URS | 13 | 8 | | Add “Criteria for effective adaptation and mitigation...” URS | Thank you. The Executive Summary has undergone major revision based on many comments. The entire report has been more heavily referenced so it is clearer that it is based on sound science. |
| P | Webster, R. | 14 | 1 | 2 | “This report responds to that need by synthesizing the large and growing body of science that deals with how climate is changing, and the impacts of these changes on the United States, now and in the future.” This statement, at the beginning of this section, reflects a proper approach for this report. Unfortunately, it is abundantly clear that this is not what has been done. There is a consistent bias demonstrating that the only “body of science” considered is dated information from IPCC Summary Reports about which a “growing body of science” and observational evidence refutes! There is nothing to indicate that the research conducted during the past several years that successfully challenges major assumptions underlying IPCC model runs has been given any consideration whatsoever. There is no evidence that stable and falling global temperatures this century have been taken into account. The failure of the IPCC theory of anthropogenic global warming, AGW, to produce certain predicted effects (e.g., tropical mid-troposphere warming, polar warming) should be sufficient to completely dismiss the AGW theory as fatally flawed. Given that the IPCC AGW theory’s projected tropical mid-troposphere greenhouse gas signal is completely missing in the satellite and radiosonde records (the only two credible records for temperature in that portion of the atmosphere), the obvious conclusion should be that natural climate forces need to be investigated with much greater rigor. The missing tropical mid-troposphere signal should be sufficient to strike a fatal blow to the IPCC’s AGW theory. However, there is more. The AGW theory predicts both Arctic and Antarctic surface temperatures will warm well before warming is experienced in lower latitude surface temperature records. This pillar of the theory has collapsed as the Antarctic has continued its more than 50-year cooling trend. Summer Arctic sea-ice retreat in recent years was most likely a consequence of the warm-phase PDO persistently driving warmer ocean water into the Arctic region. However, since the PDO has shifted to its cold phase, Arctic sea-ice decline has reversed and the 2008 summer sea-ice melt was significantly less than it was during the summer of 2007 being at least 500,000 sq km less than the melt observed | Thank you. The About this Report section has been revised to better articulate the purpose of this report, consistent with major revisions throughout the report based on many comments. |

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| | | | | | | <p>in 2007. The 2007-2008 winter sea-ice buildup was greater than in most recent years. A further example of current Arctic cooling is the record cold summer currently being experienced in extreme northeastern Canada and Alaska (as testified to by official temperature records in Anchorage, Alaska: fewest days where temperature reached a high of at least 60°F, fewest days where temperature reached a high of 65°F, etc.). Other contradictory evidence that put additional nails in the coffin of the IPCC’s AGW theory include global cooling of ocean surface temperatures, record cooling in southern hemisphere winters of 2007 and 2008, record cold northern hemisphere winter in 2008 and a clear lack of correlation of global temperature with atmospheric CO2 over any meaningful timeframe. Any one of these observations is sufficient to strike a fatal blow to the AGW theory. But the AGW theory carries on oblivious to its fatal wounds. This can only happen because certain individuals who have a financial or political interest in the success of the AGW theory continue to ignore these fatal blows. How can this draft report that so obviously relies upon the validity of the AGW theory be taken seriously when the AGW theory is demonstrably invalid? Recent investigation of the IPCC’s assumptions about climate sensitivity to increased atmospheric CO2 convincingly demonstrates that climate change is virtually insensitive to changes in atmospheric CO2 (“Climate Sensitivity Reconsidered”, Christopher Monckton, July 2008, APS newsletter, Physics & Society). It is quite obvious that this draft report is based on an acceptance of the AGW theory without challenge, despite the many observational contradictions to and scientific research that clearly invalidate the theory! No theory can legitimately withstand a single instance where the theory fails, yet this report adopts the AGW theory of the IPCC despite the many instances where the theory is contradicted by real world observations! Has the panel that produced this draft travesty so little regard for the scientific method? Where are the contributions from Dr. Richard Lindzen, Dr. Roy Spencer, Dr. Fred Singer, Dr. Patrick Michaels, Dr. Tim Patterson, Dr. Bob Carter, Dr. Edward Wegman, Dr. Richard Tol, Dr. Christopher Landsea, Dr. Duncan Wingham, Dr. Marcel Leroux, Dr. Vincent Gray, Dr. Sun-Ichi Akasofu, Dr. Howard Hayward, Mr. Tom V. Segalstad, Dr. Nir Shaviv, Dr. Zbigniew Jaworowski, Dr. Hendrik Tennekes, Mr. Freeman Dyson, Prof. Antonino Zichichi, Dr. David Bromwich of the Byrd Polar Research Center, Dr. Eigil Friis-Christensen, Dr. Henrik Svensmark, Dr. Jasper Kirkby, Dr. William Gray, Dr. Ross McKittrick, Lord Christopher Monckton, and the many, many others of the same very high caliber who recognize the flaws of the IPCC’s AGW theory? As Nils-Axel Mörner observed, the IPCC has changed the nature of scientific</p> | |

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| | | | | | investigation from: “Observation---interpretation---conclusion” to: “Idea---modeling to prove the model---lobbying to endorse the scenario” and by relying so extensively on IPCC material, your draft report endorses that new approach and fails to synthesize anything. Indeed, it is more like an exercise in circling the wagons around the AGW theory in a last-ditch attempt to save it from annihilation as a result of a host of new research and observational evidence. -- Webster, (Retired DA/DoD) | |
| P | Knappenberger | 14 | 3 | | <p>It is important to make clear to the readers of the report that while the authors of this CCSP report supplemented the other Assessment Reports with papers from the peer-reviewed scientific literature, the CCSP authors went to great lengths to ignore those peer-reviewed literature articles which either presented different conclusions or which directly criticized the papers that the CCSP authors did choose to rely on. The failure to include relevant but contradictory evidence stands in stark opposition to the pledge in the first paragraph of p. 14 which states that “U.S. policymakers and citizens ...need the best available science” and that “[t]his report responds to that need...”</p> <p>Recommendation: Add the following paragraph after paragraph 4, page 14:</p> <p>“In order to present a unified synthesis product, we chose not to include articles from the peer-reviewed scientific literature or other widely available government data that questioned or run counter to any of the findings that we present in this report.” Alternatively, the bulk of the report should be modified such that it actually does present the “best available science.”</p> <p>Knappenberger, New Hope Environmental Services</p> | <p>Thank you. The About this Report section has been revised to better articulate the purpose of this report, consistent with major revisions throughout the report based on many comments.</p> <p>The USP is a synthesis of all the peer-reviewed literature.</p> |
| P | Stouffer | 14 | 3 | | <p>3rd and 4th PP: (I have been very critical of the procedure for writing/reviewing the CCSP reports. I think they suffer greatly because of the poor and unclear framework. In this section, the reader should be given some information on the review procedure used in developing the reports. Critical is an assessment of who has the last word in editing the reports. Is it the White House? Government administrators? Scientists?</p> <p>Stouffer, GFDL/NOAA</p> | <p>Thank you. The USP is a synthesis of all the peer-reviewed literature, especially those highlighted in the About this Report section.</p> |
| P | Knappenberger | 14 | 6 | 1 | <p>Insert the word “negative” before “impacts of climate change” so that the first sentence reads “While the primary focus of the report is on the negative impacts of climate change on the U.S....” This insures that the reader has a more accurate idea of the intent of the report.</p> | <p>Thank you. As stated in the report, human and natural systems are adapted to historical climate. Any changes from the historical climate, either warming or cooling, are bound to have negative effects dominate because the climate would be out of the range that</p> |

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| | | | | | Knappenberger, New Hope Environmental Services | systems have adapted to. The revised USP does reference both negative and positive impacts. |
| P | Goklany | 15 | | | <p>It's not clear from the description provided on page 15 how precisely various outcomes and projections were determined to by the "team" be "likely" (or not) or "very likely" (or not), and "virtually certain" (or not). There should be greater discussion of the precise methodologies employed, the specific criteria used to decide whether something is deemed to be "likely," etc., with a few examples as to how the methodologies and criteria were actually implemented, and include a discussion addressing the following points: Would random sets of scientists looking at the identical evidence come to the same determinations? Are the determinations objective and reproducible? What is the evidence for that? On the other hand, if the criteria and their implementation are not objective or reproducible, one must question their inclusion in a scientific document.</p> <p>I recognize that this is a summary document, but because it is also a scientific report, methodological issues must necessarily be discussed, however briefly. Moreover, although space within the hard copy of the document is limited, it is still incumbent upon CCSP to provide other researchers and the general public the requisite information to be able to replicate and verify its findings and statements, and there ought to be enough space on the CCSP servers to furnish detailed, and readily-accessible, information. Accordingly, CCSP should (a) archive the precise methodologies used to arrive at these determinations, (b) show how these methodologies were implemented, and (c) make this material readily accessible on a CCSP website, in case other researchers and members of the general public want to try to reproduce them. In the meantime, I have a few specific requests regarding such specific determinations:</p> <ul style="list-style-type: none"> Page 28, 1st paragraph. It is claimed that "about 1.5°F of this total warming [referring to 'human-caused emissions of heat-trapping gases'] has already occurred over the past century". Based on the statement on p.15 — that unqualified statements should be deemed to be virtually certain —this statement can logically be interpreted to mean that CCSP is virtually certain that the temperature indeed increased by 1.5°F over the last century. First, is that the 20th century, 1907-2006, or what? [Note that to avoid beginning- and end-point bias, I would recommend using the longest period possible, even if it works out to something like 1880-2006, or whatever?]? Second, | <p>Thank you. This is now described in greater detail in the About this Report section.</p> <p>We have revised the document to better reference the methodologies supporting the text.</p> |

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|  | | | | | | <p>and more importantly, on page 6, it says that the observed increase is also 1.5°F (although the period over which this “observation” applies isn’t specified; see Comment 6). Are these two increases referring to the same increase over the same period? If so, that suggests that the total increase over the period was due to “human-caused emissions of heat-trapping gases.” If so, I’d like to see proof of this statement.</p> <p>Moreover, what precisely was the methodology used to derive this 1.5°F estimate? It’s been noted in Appendix A that a number of the US HCN stations seem to be poorly sited and poorly maintained. Were the sites and stations that were used to generate the 1.5°F estimate visited and their histories reviewed to assure that the data they had produced (or were producing) were not affected over time by changes in land use, land cover, heat sources and sinks acting at various geographical scales (ranging from the micro- to the regional-scale), changes in instrumentation, operation and maintenance practices, etc.? Were the data they produced quality assured? What were the methodologies used, if any, to address potential issues related to these sites? Were the methodologies peer reviewed and verified as producing relatively accurate data? What, if any, were the adjustments made to the raw data? What verification, if any, was undertaken with respect to the adjusted numbers? What is the error associated with the estimate provide above, and how was that estimated? Finally, did the 1.5°F-estimate utilize data from any of the stations that were/are rated of Quality 2 or above per the data base compiled by Watts (2007, 2008)? I should emphasize once again that even if this information is not made available in the hard copy of the report, the information used to generate the above statements should be made available at a readily-accessible site so that other researchers or even members of the general public can replicate (or not) the above results.</p> <p>Goklany</p> | |
| | P | Haapala | 15 | | | <p>Background Image Carbon dioxide is a non-toxic, tasteless, colorless, and odorless gas which cannot be visually detected by looking at a chimney. This image, as well as many other images in the USP, are designed to elicit an emotional rather than rational response and must be dropped from the USP. Without such a correction the USP fails to meet the authors’ claim of representing the “best available science” (p.14) and the “best available evidence” (p.15) as well as violates standards of objectivity.</p> | Thank you. This image has been removed. |

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| | | | | | Haapala, NIPCC | |
| P | Webster, R. | 15 | | 12 | The statement: “The goal of this report is to make the key results of the enormous body of scientific information about climate change and its impacts on the United States accessible in a single plain-English document that can help inform public and private decision making at all levels.” The reality: The panel that put together this draft report chose only to consider information from the (flawed) “body” of AGW-supportive information and has chosen to ignore the mountain of research and observational evidence developed in recent years that invalidate the AGW theory. This is not conducive to helping “inform” the “public and private decision making at all levels.” It does serve to misinform by failing to present a balanced honest discussion of this important issue. As a consequence, this draft report will be seen to be nothing less than mere propaganda designed to prop up the fatally-flawed IPCC AGW theory. -- Webster, (Retired DA/DoD) | Thank you. The USP is a synthesis of all the peer-reviewed literature, especially those highlighted in the About this Report section. |
| P | Stouffer | 15 | 1 | 9 | Statements that are not qualified ... - This is VERY dangerous. Does it apply to the whole document? One needs to go over every statement very carefully if this sentence is included. Stouffer, GFDL/NOAA | Thank you. We have carefully reviewed the document to ensure that the revised text includes the appropriate qualifiers throughout. |
| P | Fleming | 15 | 3 | | The last paragraph (on page 15) states the icons are used to identify "the sources primarily drawn upon" for each section. I read the report once and scanned through it twice. However, I do not see this icon used to identify any information or source. Yes, the report uses descriptions such as uncertain, uncertainties, difficult to resolve and others. A balanced science report should identify the uncertainty. Section labeled "Pathways to Improved Decision Making" (page 162) appears to be an attempt to brush over or hide any known uncertainty. Basically, what are the uncertainties in this information? Where can this information be found in the report? Fleming, Public Citizen | Thank you. We have clarified how these icons are used throughout the report. They are a short-hand way of visually noting the major literature resources in each individual section of the USP, while individual references are made through endnotes. Uncertainty is discussed in the About this Report and Global sections. |
| P | Polansky | 15 | 3 | | “The icons above represent some of the major sources drawn upon for this synthesis report.” While this is technically not a footnote or scientific citation in the traditional sense, using bibliographic format to describe the source, the representation here is that the SAPs, in their entirety, were drawn upon to develop the USP; however, more than half of the 21 SAPs have as yet to be published and some familiar with the CCSP program have expressed doubt that it will be possible to complete them before the end of the presidential term. Press accounts of objections to this problem, describing formal comments | Thank you. Most SAPs have been released in draft form. Some are pending final approval. But this final step should not alter any of the science that the SAP documented. The USP will not cite any SAP that is not available. But at the current time that will likely only be one of the 21 SAPs. |

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| | | | | | <p>submitted by the US Chamber of Commerce, and possibly others, reveals that the authors and/or the CCSP/NOAA did not take sufficient care to produce a document that would be unimpeachable by reviewers, including the dwindling yet still quite vocal set of individuals we have come to refer to as “denialists” intent on obstructing the effective communication regarding serious climate change impacts to the voting public. This oversight may be a symptom of the rushed manner in which this document was produced. What is the formal federal government position on this matter, and how do the authors intend to correct this problem? Also, what can be done to ameliorate any repercussions of these complaints by the US Chamber and others, in terms of discrediting what otherwise might be viewed as a credible, fully referenced climate impacts assessment?</p> <p>Polansky, Climate Science Watch</p> | |
| P | Clarke | 16 | | | <p>Bullet 7 "reduced" would be a better choice than "minimized". To me, "minimized" suggests that there is some optimum level of emissions for which the climate impact is a minimum.</p> <p>Clarke, DFO</p> | Excellent suggestion. The report has been revised taking this comment into consideration but implementing a different approach. |
| P | D'Aleo | 16 | | | <p>Sea level rise has actually stopped or reversed as the oceans cooled and contracted. The report thus is in error and does not reflect actual conditions as mandated by the IQA.</p> <p>(Note: Figures inserted – in digital file) From University of Colorado using global sea level data adjusted for seasonal changes. The first graph applies a linear trend. The second a polynomial fit which shows turn down in the last 2 years.</p> <p>This fits the cooling pattern of the oceans related to changes in the PDO and La Nina, totally natural factors. They show how natural factors can interrupt the long term gradual rise in sea level that has been observed since the last ice age.</p> <p>CORRECTION REQUIRED In keeping with the IQA, these statements are patently incorrect and must be removed and corrected as follows.</p> <p>Sea levels have been slowly rising on the long term since the ice age. Sea levels since 2006 have stopped rising and fallen slightly due to ocean cooling and</p> | Thank you. The last two months of global sea level are right on the long-term trend line of 3.3 mm/year. Climate varies on short time scales, such as the flat sea level from 1993 through 1995. The long-term change is definitely up though as indicated in the USP. |

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| | | | | | contraction. The changes are not at all what was expected (is much less) a few years ago including the 2007 IPCC. These changes are due to natural factors. D'Aleo, Fellow of AMS | |
| P | Haapala | 16 | | | Bullets 1 and 2 “Human-caused increases in the emissions...” and “Changes in purely natural factors also...” By artificially truncating the scope of the USP to fifty years, the USP ignores the natural forces that caused the Holocene Climate Optimum, the Medieval Warm Period and the Little Ice Age. In the USP there is no rigorous differentiation between human and natural causes because the USP ignores natural causes other than the contrived 50 year period. These statements are speculative and must be dropped. Without such a correction the USP fails to meet the authors’ claim of representing the “best available science” (p.14) and the “best available evidence” (p.15) as well as violates standards of objectivity. Haapala, NIPCC | Thank you. This is now more clearly explained in the text. As the figure on page 20 indicates, it is primarily the last 50 years where anthropogenic warming is differentiated from natural variability. Climate change in the Little Ice Age, the latter half of the 20 th Century, etc. all have causes. But they have different causes. |
| P | Haapala | 16 | | | Bullet 7 “The specific patterns of recent ...” The patterns are not identified and must be identified for the statement to be meaningful. As pointed out in my comments of page 26 and 27, the suggested patterns do not exist in nature. The Point must be dropped. Without such a correction the USP fails to meet the authors’ claim of representing the “best available science” (p.14) and the “best available evidence” (p.15) as well as violates standards of objectivity. Haapala, NIPCC | Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re-examine the issue when the Second Draft is released for review. |
| P | Haapala | 16 | | | Picture Box of billowing smoke Carbon dioxide is a non-toxic, tasteless, colorless, and odorless gas which cannot be visually detected by looking at a chimney. Such images are designed to elicit an emotional rather than rational response and must be dropped from the USP if it is a scientific report. Without such a correction the USP fails to meet the authors’ claim of representing the “best available science” (p.14) and the “best available evidence” (p.15) as well as violates standards of objectivity. Haapala, NIPCC | Thank you. This picture has been removed. |
| P | Knappenberger | 16 | | | Bullet 1 New results reported in Nature magazine (Thompson et al., 2008) indicate that data issues involving SST data in the mid 20th century may ultimately change the character of the global temperature record for a few decades starting in the mid-1940s (an apparent cooling period in the global temperature record). Thompson et al. think that the data corrections will result in a lessening of the magnitude of | Thank you. Data sets are continually improved. The Thompson article describes one aspect. As more recently digitized World War II SST data are incorporated, more changes are likely. The USP must rely on what the current data sets indicate. |

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| | | | | | <p>the cooling in the mid-20th century, which will likely have an effect of reducing the total amount of warming during the past 50 years.</p> <p>Recommendation: Change the first bullet text such that it refers to the past 30 years, rather than the past 50 years. Knappenberger, New Hope Environmental Services</p> | |
| P | Knappenberger | 16 | | | <p>Bullet 2 As I have just described, new research (Thompson et al., 2008) indicates that the character of the global temperature history will have to be modified as a result of some just-detected problems with the mid-20th century SST data. Thus, the relative contribution of natural vs. anthropogenic factors in determining the global temperature history in the mid-20th century cannot, as of yet, be accurately assessed.</p> <p>Recommendation: Change the 2nd bullet text such that it refers to the past 30 years, rather than the past 50 years. Without such a correction, the statement fails to meet the authors' claim of representing the "the best available science" (p. 14) and otherwise violates applicable objectivity requirements. Knappenberger, New Hope Environmental Services</p> | <p>Thank you. Actually it can. The figure on page 20 shows global climate observed and modeled. The blip up in the observed data in the 1940s is a function of SSTs during WWII. Preliminary indication is that the newly digitized data is lowering that blip, which will likely address part of Thompson et al.'s concerns as well. Since 1950 the data are more reliable and that is when the natural versus anthropogenic separate.</p> |
| P | Knappenberger | 16 | | | <p>Bullet 5 As can be seen on the graph on page 25 (in the "Arctic sea ice decline is accelerating" box), in fact, the character of the timeseries of annual Arctic sea ice minima is not one indicative of "acceleration" but rather of a linear (constant rate) decline. A single low point (outlier) at the end of the record is not a statistically robust indicator of a change in slope or acceleration. Thus this bullet is statistically in error.</p> <p>Recommendation: Remove bullet entirely, or change to read "Arctic sea ice has been declining steadily for the past two decades." As it now reads it is statistically and scientifically inaccurate. Knappenberger, New Hope Environmental Services</p> | <p>Thank you. Arctic sea ice decline has moved to the National chapter and the key message is about declining rapidly with the graph accurately described in the text.</p> |
| P | Knappenberger | 16 | | | <p>Bullet 6 In fact, since 1998, the apparent leveling-off of the global temperature record is strongly dominated by the combined influences of ENSO, volcanic and solar variability—the so-called "natural" signals. These natural signals have, in fact, over the past 10 years, dominated the anthropogenic signal in the global</p> | <p>Thank you. "Since 1998" but not since 1999: if the time series starts in 1999 global temperatures have not leveled off. Only starting during the large el Nino can one make that statement. Global temperatures have periods in the past where they leveled off (such as from the late 1970s through early 1980s) and it would give an</p> |

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| | | | | | <p>temperature record, and therefore, also to a significant degree, many “specific patterns of recent climate change.”</p> <p>Recommendation: Remove bullet entirely, or change to read “In recent years, climate change has been dominated by natural, rather than anthropogenic, signals.” Without such a correction, the statement fails to meet the authors’ claim of representing the “the best available science” (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | <p>inaccurate impression that global warming had stopped when the long-term is definitely up.</p> |
| P | Knappenberger | 16 | | | <p>Bullet 10</p> <p>This wording of this bullet is very vague. The words “minimized” and “sharply reduced” are not scientifically (or otherwise) defined. In fact, the human effect can be reduced (although perhaps undetectably) for any cuts in emission that lead to a slowdown of the atmospheric build-up. Why are “sharp reductions” necessary to “minimize” the effect? Won’t even “sharper reductions” reduce the effect even more? So what is the definition of minimized?</p> <p>Recommendation: Remove bullet entirely, or change to read “The human effect on climate can only be slowed in a detectable manner if greenhouse gas emissions are reduced through global cooperation. No locality, state, or even country, acting alone, can produce any scientifically meaningful reduction in the rate of future climate change that results from anthropogenic greenhouse gas emissions.”</p> <p>Knappenberger, New Hope Environmental Services</p> | <p>Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re-examine the issue when the Second Draft is released for review.</p> |
| P | MacMurray | 16 | | | <p>Bullet 1</p> <p>Change “Human-caused increases ...” to “Based on computer models, human-caused increases...”</p> <p>MacMurray, Public Citizen</p> | <p>Thank you. This bullet has undergone major revisions.</p> |
| P | Meyer | 16 | | | <p>Bullet 1</p> <p>This comment is both about this first point as well as the entire report. Never have I seen a document purporting to be scientific that has been so shallow and poorly structured. Numerous times I have attempted to find sources for certain statements like this first one, and found no footnoting or sourcing.</p> <p>When there have been footnoted sources, often the source is not available because it has not yet been published. It is incredibly disingenuous to set a comment</p> | <p>Thank you. The report has undergone major revisions based on this and other comments. The document is much more thoroughly cited.</p> <p>Almost all work cited has been published, but the USP also wanted to use the very latest information so it has relied on work that is in</p> |

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| | | | | | | <p>period deadline before much of the material in the report can be checked.</p> <p>Finally, and most importantly, if this document is meant to be a political attack piece by a particular interest group, it is well-constructed. However, if it is meant to be a balanced view of the state of the science and the threats faced, it is the most abysmal, one-side document I have ever seen. Not once in this entire chapter was there a hint of doubt or uncertainty. Topics for which scientists have but the flimsiest of understandings, for example feedback effects, are treated with the certainty of Newtonian mechanics. Any bit of conflicting evidence -- whether it be the fact that oceans were rising before the industrial era, or that tropospheric temperatures are not higher than surface temperatures as predicted, or that large parts of Antarctica are gaining ice -- are blissfully omitted.</p> <p>My point is not that the report should agree with my position, but that it should mention where scientists are getting measurement results that don't fully match the conclusions and still need to be explained. Here are a few examples of what an honest report would mention:</p> <ul style="list-style-type: none"> • On the exact same day in 2007 when Arctic sea ice was hitting a 30-year low, Antarctic sea ice was hitting a 30-year high. • • Over the last 4 years, the Argo network has actually measured a decrease in ocean heat content • • Over the last 10 years, satellites have measured a flat to declining surface temperature trend • • Troposphere temperatures over the Tropics are not higher than surface temperatures as global warming theory would predict • <p>The report needs to address these issues, and not treat the data as if it is lining up 100% around the report's hypothesis. None of these have to be "daggers" that kill the report's hypothesis, but they need explanation. For example, the difference in Arctic and Antarctic sea ice behavior might be due to greater sea area in the Southern Hemisphere that time-delays the warming signal. By omitting any of these issues, your report is just dodging them.</p> <p>Since the IPCC Fourth Assessment used similar language, there has been substantial</p> | <p>press.</p> <p>The revised report synthesizes the full range of the peer-reviewed literature.</p> <p>The global section has been rewritten to more clearly explain how the climate is changing, how it is known that human influences are causing it, and projections of the future.</p> |

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| | | | | | <p>confusion over the word “most.” By “most”, do the author’s mean “greater than 50%?” This report should be more specific. If it cannot be more specific, then it needs to give an assessment of its certainty and the range of likely values for past man-made global warming.</p> <p>Meyer, Climate-Skeptic.com</p> | |
| P | Meyer | 16 | | | <p>Bullet 3</p> <p>The term “heat wave” is a nebulous term without scientific definition. Without a definition, it cannot possibly be measured. This is a mere assertion, not a statement based on any facts.</p> <p>Meyer, Climate-Skeptic.com</p> | Thank you. The bullet has been revised. |
| P | Meyer | 16 | | | <p>Bullet 4</p> <p>Sea levels have been rising steadily for hundreds of years, long before mankind’s fossil fuel combustion. To have meaning, sea level rise would have to accelerate over this natural historical trend line, and it has not. Over the last four years, sea levels have actually fallen slightly.</p> <p>Meyer, Climate-Skeptic.com</p> | Thank you. The discussion of sea level has moved to the National section so geologic forces as well as climate forces could be discussed as needed to put it into accurate perspective. |
| P | Meyer | 16 | | | <p>Bullet 6</p> <p>This is a scientifically meaningless statement. What matters is if the trends are accelerating, not how the trends compare to past projections. The statement as-is is merely a comment on past forecasting ability, not real physical processes.</p> <p>Meyer, Climate-Skeptic.com</p> | Thank you. The bullet has been removed. |
| P | Meyer | 16 | | | <p>Bullet 7</p> <p>This statement is partially incorrect. Yes, there is a “fingerprint” of stratospheric temperatures falling while surface temperatures are rising, but there is a second expected fingerprint that the troposphere should heat more than the surface, particularly in the tropics. In fact, we see no such thing. The troposphere, if anything, appears to be warming the same or less than the surface, and the troposphere in the tropics has not warmed at all over the last 30 years. Your report even says as much on page 22, stating “These measurements show warming of the troposphere (the layer of the atmosphere just above the surface), consistent with the surface warming.” But theory and models predict that they should not be consistent. The only sure-fire fingerprint for man-made global warming that scientists have given us is not appearing.</p> <p>Meyer, Climate-Skeptic.com</p> | Thank you. The bullet has undergone major revision. |
| P | Schmaltz | 16 | | 1 | <p>The term "human-caused" is used in reference to so-called global warming is mis-used being there is no scientific proof that global warming, which subsided a</p> | Thank you. To the contrary, there is a plethora of peer-reviewed research that discerns the human signature on recent climate |

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| | | | | | decade ago, is the result of man's activities. Schmaltz, Public Citizen | warming as described in the IPCC report and various CCSP SAPs. |
| P | Webster, R. | 16 | | | Bullet 1 This merely parrots the IPCC which has been demonstrated to be inaccurate in its methodology, its assumptions, and its conclusions by both scientific research and observation of real world characteristics. This bullet has no place in an objective report and should be stricken. -- Webster, (Retired DA/DoD) | Thank you. No, it is based on sound peer-reviewed science. |
| P | Webster, R. | 16 | | | Bullet 3 This is a relative statement without any proper timeframe or locale for reference. As such, the statement is improper and cannot be either substantiated or refuted. Temperatures and precipitation have increased where? How different is the observed change from temperature and precipitation over the past 1000 years? This bullet should be stricken as both speculative and inaccurate. -- Webster, (Retired DA/DoD) | Thank you. The key messages for this section have been revised. |
| P | Webster, R. | 16 | | | Bullet 4 This is absolutely inaccurate. Oceans are cooling, and Arctic sea ice decline ended in 2007. Observational evidence completely refutes this bullet and it must be stricken as misleading. -- Webster, (Retired DA/DoD) | Thank you. Short-term variability should be expected amidst long-term climate change. So, for example, Arctic sea ice is down from over 5 million square miles in prior to 1970 to about 4.25 million now. The variability of 2008 being slightly more than 2007's record low does not mean the long-term trend has changed. |
| P | Webster, R. | 16 | | | Bullet 5 This is absolutely inaccurate. Arctic sea ice decline ended in 2007. 2008 summer ice melt is less than 2007's by at least 500,000 sq km. This bullet must be stricken as misleading and dishonest. -- Webster, (Retired DA/DoD) | Thank you. Short-term variability should be expected amidst long-term climate change. So, for example, Arctic sea ice is down from over 5 million square miles in prior to 1970 to about 4.25 million now. The variability of 2008 being slightly more than 2007's record low does not mean the long-term trend has changed. |
| P | Webster, R. | 16 | | | Bullet 6 This is inaccurate. Given that ocean temperatures have declined over the past two years, global average temperature of the air has declined over the past two years, and now Arctic sea ice decline has ended and been reversed during 2008, every one of the predictions to the contrary have been shown to be erroneous by real world observation. This bullet must be stricken as misleading and inaccurate. -- Webster, (Retired DA/DoD) | Thank you. The key messages for this section have been revised. |
| P | Webster, R. | 16 | | | Bullet 7 Inaccurate and should be stricken as misleading. There is no validated scientific research or observational evidence to support the contention of this bullet. -- Webster, (Retired DA/DoD) | Thank you. The key messages for this section have been revised. |

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| P | Webster, R. | 16 | | | <p>Bullet 8 Even the IPCC has acknowledge since its last report that global temperatures are in decline and are likely to remain in decline until at least 2015, all due to natural climate variability. This bullet must be stricken as inaccurate and misleading and contrary to observed temperature trends during the 21st century. -- Webster, (Retired DA/DoD)</p> | <p>Thank you. Again, the focus of the USP is on long-term changes, not short-term variability.</p> |
| P | Webster, R. | 16 | | | <p>Bullet 10 There is no validated scientific research that discerns a human signature to any recent climate warming, nor is there any such validated research that indicates human reductions of greenhouse gas emissions will have any discernible impact on future climate. This bullet must be stricken as purely speculative and not supported by validated climate science research. -- Webster, (Retired DA/DoD)</p> | <p>Thank you. To the contrary, there is a plethora of peer-reviewed research that discerns the human signature on recent climate warming as described in the IPCC report and various CCSP SAPs.</p> |
| P | Williams | 16 | | | <p>Bullet 1 Change “Human-caused increases in the emissions of heat-trapping gases are responsible...” to “Human-caused increases in the emissions of heat-trapping gases may be responsible...”</p> <p>The rise in CO2 follows temperature by 800 +/- 200 years. (Nicolas Caillon, et al., Timing of Atmospheric CO2 and Antarctic Temperature Changes Across Termination III. Science Magazine: Vol 299, March 14, 2003: Page 1728). If so, the current rise in CO2 is due to the Medieval Warm Period not human-caused.</p> <p>“But since 1999 new evidence has seriously weakened the case that carbon emissions are the main cause of global warming, and by 2007 the evidence was pretty conclusive that carbon plays only a minor role and is not the main cause of the recent global warming. As Lord Keynes famously said, When the facts change, I change my mind. What do you do, sir?” Quote from Dr David Evans, this week’s NZCPR Guest Commentator, understands the controversy over global warming better than most. As a scientist working for the Australian Greenhouse Office, he developed the carbon accounting model that measures Australia’s compliance with the Kyoto Protocol.</p> <p>American Association of Petroleum Geologists: The earth’s climate is constantly changing owing to natural variability in earth processes. Natural climate variability over recent geological time is greater than</p> | <p>Thank you. There is a tremendous amount of evidence in the peer-reviewed literature that greenhouse gas emissions currently dominate climate change.</p> |

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| | | | | | | <p>reasonable estimates of potential human-induced greenhouse gas changes. Because no tool is available to test the supposition of human-induced climate change and the range of natural variability is so great, there is no discernible human influence on global climate at this time. (Annual report.” AAPG Bulletin, vol. 84, issue 4 (April 2000), pp. 466-471. Available at http://aapgbull.geoscienceworld.org/cgi/content/abstract/84/4/466) Michael Caplinger of Malin Space Science Systems. As reported in Science http://www.space.com/scienceastronomy/solarsystem/mars_snow_011206-1.html :</p> <p>“But he said many scientists assume that Mars undergoes climate change. Photos of the surface suggest water may once have flowed on Mars, implying that it would have been warmer. And Earth's ice ages offer the lesson that change is inherent in a climate. “ (Emphasis added).</p> <p>As a person impacted by the discussion who has experience reading reports and listening to scientists and engineers make their case for their position you get a feel for what is right. The argument that global warming is human-caused has not been proven or reasonably demonstrated.</p> <p>Williams, Public Citizen</p> | |
| | P | Williams | 16 | | | <p>Bullet 2 Change “Changes in purely natural factors also influence climate, but cannot explain the warming of the past 50 years.” to “Changes in purely natural factors also influence climate, but are not fully understood and require additional study to establish their impact.”</p> <p>From the IPCC’s report, Climate Change 2001: “The Earth’s atmosphere-ocean dynamics is chaotic: its evolution is sensitive to small perturbations in initial conditions. This sensitivity limits our ability to predict the detailed evolution of weather; inevitable errors and uncertainties in the starting conditions of a weather forecast amplify through the forecast. As well as uncertainty in initial conditions, such predictions are also degraded by errors and uncertainties in our ability to represent accurately the significant climate processes.”</p> <p>The above quote indicates the complex chaotic nature of the problem of understanding our climate and all the interactions. To date climate models have not demonstrated that they are accurate. They have not been “validated” in the</p> | <p>Thank you. The key messages for this section have been revised.</p> |

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| | | | | | <p>classic sense and recent real world data indicates that they are in fact in error. When you have to adjust them to account for the actual temperatures then the model is wrong and should not be used until it matches real world data. This indicates to me that assumed forcing inputs are wrong (GIGO). Until the models explain the emergence from last ice age, the Climatic Optimum, the Medieval Warming Period, and the Little Ice Age you cannot make this statement. Those are not human-caused and had a greater impact on our climate than the changes in the last 50 years.</p> <p>Williams, Public Citizen</p> | |
| P | Williams | 16 | | | <p>Bullet 7, 8 & 10 Delete all three bullet points. They have not been established as fact. Until you can explain the emergence from last ice age, the Climatic Optimum, the Medieval Warming Period, and the Little Ice Age you lack the knowledge to make these statements. Climate models are not data – merely speculation based on faulty input.</p> <p>Williams, Public Citizen</p> | Thank you. The key messages for this section have been revised. |
| P | Stouffer | 16 | 1 | | <p>Bullet 1 Is this a virtually certain statement? The idea that it is a global average temperature assessment is missing. The statement as it stands is wrong and very misleading. Tone and balance Stouffer, GFDL/NOAA</p> | Thank you. There is a tremendous amount of evidence in the peer-reviewed literature that greenhouse gas emissions currently dominate climate change. |
| P | Tateman | 16 | 1 | | <p>Human-caused increases in the emissions of heat-trapping gases are responsible for most of the warming observed over the past 50 years</p> <p>Wrong! The Sun / Ocean system control the planets temperature, normal cycles are responsible for All fluctuations we observe. Look at the recent shift in the Pacific Ocean temperature from warm to cold this past spring, and how much cooler the country has been this year. This cycle is likely to last for the next 20 to 30 years, just as the last cycle lasted about 30+ years on the warm side. Again look at your own data! Grade "F"</p> <p>Tateman, Public Citizen</p> | Thank you, but no. The USP summarizes the totality of the peer-reviewed research which clearly finds that the observed warming is due to greenhouse gases not solar changes, etc. |
| P | Stouffer | 16 | 2 | | <p>Bullet 2 Is this a virtually certain statement? The idea that it is a global average temperature assessment is missing. The statement as it stands is wrong and very misleading. Tone and balance Stouffer, GFDL/NOAA</p> | Thank you. The key messages for this section have been revised. |

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| P | Kruk | 16 | 4 | | Bullet 4 should be replaced with: “Warming is causing sea-levels to rise as ice sheets melt and the increasingly warmer oceans expand.” Kruk, NCDC | Thank you. The key messages for this section have been revised. |
| P | Stouffer | 16 | 10 | | Bullet 10 Minimized – Relative to what? Stouffer, GFDL/NOAA | Thank you. The key messages for this section have been revised. |
| P | Goklany | 17 | | | Figure First, the figure on page 17 mixes apples with oranges. The 2007 estimate is an annual average, whereas most of the data points used to generate everything before the present seem to be based on a something like a several hundred or thousand years of averages. One shouldn’t mix these different types of measurements without noting explicitly what has been done, and explaining that the two are not necessarily comparable. Second, I don’t see any error bars in this figure. Presumably there should be some. Please indicate them. Third, the text under the figure states that, “The long record of temperature and carbon dioxide tells us something else as well: there is no natural cycle or process revealed in this long climate history that could have caused the global warming of the past 50 years.” What temperature record are we referring to over here? There isn’t any temperature record shown on this page. How were the dots – or rather should I say the lack of dots -- connected in order to arrive at the above referenced statement? Moreover, if we are to address the issue of whether the temperature trends of the past 50 years are or aren’t natural in origin, I presume the temperature record will also show the “long record” based at least on a resolution of 50 years. If not, please explain the logic of the statement made herein. Third, 50 years isn’t a long enough period of time to make any determinations about whether or not there have been climatic changes outside of the bounds of natural variability (see also, Cohn and Lins 2005). Reference Cohn, T.A., and Lins, H.F. 2005. Nature’s Style? Naturally Trendy. Geophysical Research Letters, 32, L23402, doi:10.1029/2005GL024476. Goklany | Thank you. The caption has been revised and the figure has been referenced. |
| P | Haapala | 17 | | | Graph and Citation “The long record of temperature and carbon dioxide ...” The graph and the statements are grossly misleading. High resolution studies of ice core borings | No. The changes in total solar energy reaching the earth as a result of orbital changes are not large enough to cause the ice ages. The feedback of changing CO2 is required. |

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| | | | | | show that changes in carbon dioxide concentrations always follow temperature changes by centuries.ii Thus, changes in temperature were caused by natural forces other than changes in concentrations of carbon dioxide. The graph and the related text must be dropped. Without such a correction the USP fails to meet the authors' claim of representing the "best available science" (p.14) and the "best available evidence" (p.15) as well as violates standards of objectivity. Haapala, NIPCC | |
| P | Herman | 17 | | | Figure Discussion does not mention the lag between historical rises in temperature and increases in CO2 and gives the impression that CO2 changes were the cause of the rises in temperature as determined from ice core data. This omission' like many others, strongly slants the discussion towards CO2 induced warming. Herman, University of Arizona | Thank you. CO2 changes are a major feedback in the climate forcing for the past ice ages. |
| P | Knappenberger | 17 | | | Figure-Caption (2nd paragraph) This is entirely wrong. The 800,000 year-long record of CO2 concentration from the Antarctic ice core tells us absolutely nothing about the climate change of the past 50 years. True, the record suggests that no natural process of the past 800,000 years has raised the atmospheric CO2 concentration to the level that we have currently, but atmospheric CO2 concentration is but one of many different forcing factors that impact the earth's climate. The warming from the late-1800s to the mid-1940s was nearly as large as the warming during the past 50 years and yet natural forces may have caused a large portion of it (IPCC AR4 FAQ 3.1 Figure 1, caption). Thus, natural factors can cause climate changes of the magnitude that we have seen during the past 50 years and the use of the long-term CO2 ice core record is inappropriate to make such a determination. Recommendation: Remove the sentence. Without such a correction, the statement fails to meet the authors' claim of representing the "the best available science" (p. 14) and otherwise violates applicable objectivity requirements. Knappenberger, New Hope Environmental Services | Thank you. The caption has been revised and the figure has been referenced. |
| P | Meyer | 17 | | | Figure Caption The last paragraph of the chart caption is not supported by the chart. First, it mentions the long history of temperature, but there is no temperature data in the chart. Second, the x-axis scale is about 150,000 years to the inch. That means that 50 years would be 1/3000 of an inch on this chart, or about 1/10 of the width of a printing pixel. A chart scaled as such can't possibly tell us anything what to | Thank you. The caption has been revised and the figure has been referenced. |

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| | | | | | expect over a 50-year span. Meyer, Climate-Skeptic.com | |
| P | Stouffer | 17 | | | Figure The figure needs an insert to expand the last 100 years or so. See the IPCC WG1 SPM for an example. Stouffer, GFDL/NOAA | Thank you. The caption has been revised and the figure has been referenced. |
| P | Tateman | 17 | | | Figure Ice core data for 800,000 years shows a range of 170 ppm to 300 ppm CO2 !??? Reliable measurements were made in the 1800's that showed higher than today's 380 ppm. (one of those warm periods). Ice core data is at best marginal in quality, check the recent literature. Grade "D-" Tateman, Public Citizen | No. The CO2 data from the 1800s were not reliable enough to make that statement. There is a reason why CO2 observations are made atop a mountain on an island in the middle of the Pacific Ocean. |
| P | Webster, R. | 17 | | | Figure and Caption This chart represents the worst kind of data manipulation. Projections are strung onto proxy data that is not representative of global conditions. Recent research strongly questions the viability of CO2 measurements using proxies derived from the dry analysis method for estimating past atmospheric CO2 from ice cores. Such estimates are heavily biased toward dramatically underestimating ancient atmospheric CO2, particularly for the distant past represented by the deepest sections of ice cores (Global Warming in a Politically Correct Climate, M. Mihkel Mathiesen, 2001, pp 112-128). Chemical analyses yielding proxies for recent atmospheric CO2 concentrations show that CO2 has ranged to near 450 ppm during the past several hundred years (A Primer on CO2 and Climate, Howard C. Hayden, Figure 7, "CO2 measurements made by chemical means in the Northern Hemisphere, 1812-1964, 11-year averages of 90,000 measurements" pg 9, 2007). This chart should be stricken, along with its description as wholly misleading. -- Webster, (Retired DA/DoD) | Thank you. CO2 data from ice cores has indeed been questioned. However, analysis from different types of ice across similar orbital transitions shows nearly identical changes, thereby supporting the view that these data are indeed accurate and are not a function of changes in the type of ice. |
| P | Williams | 17 | | | Figure: Caption Delete sentence beginning, "We are now in uncharted territory..." During Paleozoic and Mesozic periods CO2 concentrations were 2,000 to 3,000 ppm . Williams, Public Citizen | Thank you. The caption has been revised and the figure has been referenced. |
| P | Knappenberger | 17 | 1 | 8 | It is imperative to follow this sentence up with one that lets the reader know that there is a large degree of uncertainty in relating (or projecting) local changes from changes in the global system. The Box TS10 in the IPCC AR4 WGI report discusses the inherent uncertainties and difficulties in making regional (much | Thank you. The 'local' reference here has been removed. |

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| | | | | | <p>less local) climate projections. This level of uncertainty should be reflected in the discussion of local changes.</p> <p>Recommendation: Make it clear that local-scale climate variation, while it is dependent on the “global system,” is, in many cases, very difficult to relate to changes in the global system. Thus, it is far from clear how global changes may impact local conditions. Without such a correction, the statement fails to meet the authors’ claim of representing the “the best available science” (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | |
| P | Webster, R. | 17 | 1 | | <p>The dynamics of global climate change processes is not understood sufficiently well to make any statements of this nature. Anything that purports to represent a clear understanding of how climate changes is purely speculative and unsupported by validated scientific research. The IPCC makes no attempt to understand natural climate variability over the past 1000 years and, evidently, neither do the authors of this report. --</p> <p>Webster, (Retired DA/DoD)</p> | <p>Thank you. The IPCC did indeed explain the natural climate variability over the past 1000 years as clearly evident in IPCC WGI Figure 6.13. The dynamics of global climate change processes have been well documented in the peer-reviewed literature.</p> |
| P | Webster, R. | 17 | 2 | | <p>Given the projected 2-4 decades of global cooling that appears to have begun within the past few years after a half dozen years of climate stability, the assertion that near-term climate will most likely exhibit additional warming is simply not credible nor can it be traced to any validated scientific research. Observational evidence contradicts the contentions of this paragraph. It should be deleted entirely. --</p> <p>Webster, (Retired DA/DoD)</p> | <p>Thank you. The report states what the observations and model projections indicate as reported in the peer-reviewed literature.</p> |
| P | Clarke | 17 | 7 | | <p>The paragraph refers to "the long record of temperature and carbon dioxide"; however, the figure shows only the carbon dioxide record. The conclusion that there is no natural cycle ...revealed in this long climate history is supported by the literature and previous assessments but does not logically follow the single piece of evidence presented so far in this report.</p> <p>Clarke, DFO</p> | <p>Thank you. See IPCC WG I page 467 for figures merging paleo and instrumental data.</p> <p>The USP is a synthesis of all the peer-reviewed literature.</p> |
| P | Goklany | 18 | | | <p>It seems that the lower figure also suffers from the same “averaging” and lack-of-error-bar problems noted above. The same comments apply. As background, please note whether there have been any recent changes in the rate of atmospheric accumulation of methane, nitrous oxide and other trace gases (similar to what’s included in the halocarbon discussion, although some numbers would also be appreciated).</p> <p>Goklany</p> | <p>Thank you. The figure has been referenced.</p> |

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| P | Stouffer | 18 | | | <p>Top Banner</p> <p>Is this a virtually certain statement? The idea that it is a global average temperature assessment is missing. The statement as it stands is wrong and very misleading. Tone and balance.</p> <p>Stouffer, GFDL/NOAA</p> | <p>Thank you. The reference to 50 years is consistent with what has been documented in CCSP SAP 1.1 and other peer-reviewed literature.</p> |
| P | Tateman | 18 | | | <p>Halocarbon emissions come from the release of manmade chemicals such as chlorofluorocarbons (CFCs) like Freon®, which were used extensively in refrigeration and other industrial processes before their presence in the atmosphere was found to cause stratospheric ozone depletion. The abundance of these gases in the atmosphere is now decreasing as a result of international regulations designed to protect the ozone layer.</p> <p>Recent measurements refute this entirely, it turns out CFC,s have no adverse effect on the atmosphere, check the literature. Holes in the Ozone are naturally and widespread occurrences. Grade "D"</p> <p>Tateman, Public Citizen</p> | <p>Thank you. The information in the USP has been synthesized from the totality of the peer-reviewed research.</p> |
| P | Webster, R. | 18 | | | <p>Banner</p> <p>The header states: “Human-caused changes in the emissions of heat-trapping gases are responsible for most of the warming observed over the past 50 years.” Apparently, the writers of this draft report started with this assumption, the same faulty one that the IPCC uses for its starting point. Consequently, it is no surprise that your panel comes to the same conclusion as does the IPCC summary writers! This statement is blatant speculation as there is not one validated scientific research paper that has discerned a human component to any climate change throughout Earth’s history. Every statement of this nature is speculation based on faulty assumptions and further acts to discredit your panel and this report. Consequently, this document is based upon pure speculation, not scientific or observational reality. Political arguments begin with a conclusion. Scientific arguments begin with a theory followed by investigation leading to acceptance or rejection of the theory. This draft paper (like the IPCC Summary Reports) does not present valid science, it simply itemizes a political agenda. --</p> <p>Webster, (Retired DA/DoD)</p> | <p>Thank you. The reference to 50 years is consistent with what has been documented in CCSP SAP 1.1 and other peer-reviewed literature.</p> |
| P | Webster, R. | 18 | | | <p>Graph – Greenhouse Effect</p> <p>While this chart does illustrate the simplistic “greenhouse effect” mechanism for atmospheric heat retention, it does not illustrate other natural atmospheric thermal-regulation processes, e.g., weather, for one, through convective dissipation of heat.</p> | <p>Thank you. The illustration has been removed.</p> |

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| | | | | | The illustration does properly show that even though IR heat may be absorbed by heat-trapping gases, a significant portion are re-radiated out of the Earth atmosphere. -- Webster, (Retired DA/DoD) | |
| P | Webster, R. | 18 | | | Figure-Bottom Left The scale of this chart has evidently been chosen to grossly misrepresent the historic variability of the gases illustrated. CO2 in the atmosphere has historically been at levels of many thousands of ppm during much of the past 540 million years. Some of these high CO2 concentrations have coincided with bitterly cold ice eras. This suggests CO2 is not the climate change force assumed by the IPCC and this draft report. Since real world evidence contradicts the position of the IPCC and this draft report, suggest that the draft report be revised to reflect reality, rather than unsubstantiated speculation (AGW theory). -- Webster, (Retired DA/DoD) | Thank you. The figure has been referenced. |
| P | Webster, R. | 18 | 1 | 4 | “However, by burning fossil fuels (coal, oil and gas), we release additional heat-trapping gases into the atmosphere, thus intensifying the natural greenhouse effect, and changing the climate of our planet.” Should read: “However, by burning fossil fuels (coal, oil and gas), we release additional heat-trapping gases into the atmosphere, which augment the natural greenhouse effect to an extent that may or may not be sufficient to significantly impact global climate.” There is no validated scientific research that demonstrates the human-produced heat-trapping gases are sufficient to augment warming to a degree that approaches climate change on a global scale. Until such research can demonstrate this belief as reality, then the conclusion built into that statement as written, that the tiny fraction of additional greenhouse gases emitted by humans is sufficient to alter global climate, is pure speculation and should be stricken from this paragraph. If you can demonstrate such – which you cannot – then, and only then, can such a statement be made as a conclusion, not in an introductory discussion! -- Webster, (Retired DA/DoD) | Thank you. The information in the USP has been synthesized from the totality of the peer-reviewed research. |
| P | Webster, R. | 18 | 1 | 1 | The sentence is a generalization that has no clear timeframe, i.e., CO2 “has increased” over what time period? Evidence indicates it has been increasing since the current interglacial period began about 15,000 years ago. Clearly, other sources than those identified have been at work raising and lowering CO2 over the past 15,000 years. Over short periods, atmospheric CO2 increases and decreases due to natural processes (this is in the proxy record). What is the natural component of CO2 increase over the period to which this sentence refers? -- | Thank you. The associated key message has a time context now. |

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| | | | | | Webster, (Retired DA/DoD) | |
| P | Webster, R. | 18 | 1 | 4 | States: “The concentration of carbon dioxide in the atmosphere has increased by 35 percent since the industrial revolution.” Implicit in this statement, given the context set up by the rest of this paragraph, is that human activity is responsible for the 35% increase in atmospheric CO2 “since the industrial revolution.” The underlying natural increase in atmospheric CO2 is completely missing from this paragraph and the implications of this statement. Consequently, this statement misleads and requires modification to reference natural CO2 variability, otherwise it is simply dishonest. Furthermore, there is no context given for the vast climate history of Earth which reveals that atmospheric CO2 levels as low as they are today are extremely rare (it has only been this low during one other brief period over the past 500 million years!). -- Webster, (Retired DA/DoD) | Thank you. The text has been revised. |
| P | Knappenberger | 18 | 2 | 2 | Unqualified (which means “virtually certain” according to the definitions on page 15), this statement goes well beyond the IPCC AR4 document. There is no reference for the CCSP statement. For a statement to go beyond the general assessments on which it is drawn from, a reference should be given. This IPCC AR4 (SPM page 10) states: “Most of the observed increase in global average temperatures since the mid-20th century is very likely due to observed increases in greenhouse gas contributions.” CO2 is but one of many influences on the earth’s climate. Recommendation: Add qualifications to the statement or add an appropriate reference. Knappenberger, New Hope Environmental Services | Thank you. The text has been revised. |
| P | Webster, R. | 18 | 2 | 1 | “Earth’s climate is influenced by a variety of factors, both human-induced and natural.” Should read: “Earth’s climate is influenced by a variety of factors, with natural processes dominating the climate.” There is no validated scientific research that demonstrates the human influence is of a degree that approaches climate change on a global scale. See preceding remark. -- Webster, (Retired DA/DoD) | Thank you. The natural contribution to carbon dioxide is large. But the natural contribution of carbon dioxide is completely balanced by the natural removal of carbon dioxide. The increase in carbon dioxide is, therefore, a result of human induced changes such as burning fossil fuels. |
| P | Webster, R. | 18 | 2 | 2 | “Carbon dioxide, the principal driving factor in the warming of the past 50 years, has been building up in Earth’s atmosphere since the beginning of the industrial era due to the burning of fossil fuels and the clearing of forests.” Inaccurate. Accurate would be: “Burning of fossil fuels and clearing of forests have contributed to the overall increase in atmospheric carbon dioxide since the beginning of the industrial era.” | Thank you. This sentence has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |


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| | | | | | The suggested replacement is accurate and does not venture into speculative conclusions about the consequences of the human contributions to atmospheric CO2. -- Webster, (Retired DA/DoD) | |
| P | Webster, R. | 18 | 2 | 4 | : (“These emissions are thickening the blanket of heat-trapping gases in Earth’s atmosphere, causing temperatures to rise.” This conclusion cannot be supported by any validated scientific research. It is pure speculation. Should read: “These emissions are thickening the blanket of heat-trapping gases in Earth’s atmosphere, however, the degree to which human contributions to these gases has any significant impact on climate has not been determined as yet.” -- Webster, (Retired DA/DoD) | Thank you. This sentence has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Williams | 18 | 2 | 2 | Delete” the principal driving factor in the warming of the past 50 years,” Not a proven fact. The rise in CO2 follows temperature by 800 +/- 200 years. (Nicolas Caillon, et al., Timing of Atmospheric CO2 and Antarctic Temperature Changes Across Termination III. Science Magazine: Vol 299, March 14, 2003: Page 1728). If so, the current rise in CO2 is due to the Medieval Warm Period not human-caused. Williams, Public Citizen | Thank you. This sentence has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Stouffer | 18 | 3 | | Is cement pCO2 emissions near zero as implied by the 80% due to fossil fuels and 20% for deforestation? I thought there are fairly large uncertainty bars on these estimates. Balance. Stouffer, GFDL/NOAA | Thank you. The accompanying figure has been referenced. |
| P | Michaels | 18 | 4 | | Methane concentration increases began to slow in the 1980s and have actually declined in some recent years. Every projection made by the IPCC assumed they would increase at the pre-1980 rate and that this increase will continue for at least 50 years. Text needs to be altered to note that the increase slowed and then stopped. References, Duglokenky et al. 1998, Nature; Schiermeier, 2006, Nature. Recommendation: This invalidates Key Finding 2.1. Change it to “some” heat trapping gases, and note that methane, and important heat trapping gas has stabilized or even declined in recent years, which is opposite to any “highest emission scenario”. As it now stands, the statement fails to meet the authors’ claim of representing the “the best available science” (p. 14) and otherwise violates applicable objectivity requirements | Thank you. The text has been revised. Note that CH4 is increasing again. |

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| | | | | | Michaels, Cato Institute and University of Virginia | |
| P | Zamarra | 18 | 4 | | No mention of permafrost within ‘Methane’ section, which is quite an important sink of methane. Zamarra, STG, Inc. | Thank you. The focus in this discussion is on the sources of the gases. |
| P | Goklany | 19 | | | Figure This has many of the shortcomings identified previously for the figures on pp. 17-18. Please provide sources and methodologies, error bars for both temperatures and CO2 concentrations, in particular. What is the justification for mixing paleo temperature data with relatively poor geographic coverage with instrumental annual data of differing geographical coverage? Is the pre-1957 time step for CO2 also annual? Goklany | Thank you. The figure has been removed. |
| P | Haapala | 19 | | | Graph The temperature change in this graph resurrects the hockey stick that has been publicly discredited in testimony before Congress.iii The graph and associated text must be removed. Without such a correction the USP fails to meet the authors’ claim of representing the “best available science” (p.14) and the “best available evidence” (p.15) as well as violates standards of objectivity. Haapala, NIPCC | Thank you. The figure has been removed. |
| P | Honeycutt | 19 | | | [The “hockey stick” temperature graph on this page has been thoroughly discredited as due to invalid statistical methodology – in particular, an incorrect use of principal components analysis. This graph should be removed.] Honeycutt | Thank you. The figure has been removed. |
| P | Lins & Cohn | 19 | | | Figure and figure caption Given the iconic role of the "hockey stick" in both political and scientific debate about global warming, as well as its questionable scientific foundation [e.g. NAS Report, 2006; Wegman Report, 2006], it was surprising to find the hockey stick temperature reconstruction as a figure in this report. In our opinion, inclusion of the hockey stick casts doubt on the quality and efficacy of the entire report. Moreover, nothing else in this section refers to or requires a figure showing a 1,000-year temperature reconstruction, so we suggest that a different, less controversial figure, based entirely on the observed temperature record be employed in its place. Lins & Cohn | Thank you. The figure has been removed. |
| P | MacMurray | 19 | | | Figure The figure includes a Northern Hemisphere temperature reconstruction dating back | Thank you. The figure has been removed. |

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| | | | | | <p>to 1000AD; in 2006, the National Research Council's Committee on Surface Temperature Reconstructions for the Last 2,000 Years found that "The substantial uncertainties currently present in the quantitative assessment of large-scale surface temperature changes prior to about A.D. 1600 lower our confidence ..." (in the comparison of recent temperatures with those earlier than 1600 AD). As no one has even yet convincingly estimated the magnitude of those uncertainties, the earlier-than-1600 AD portion of the NH temperature reconstruction should be removed from the figure.</p> <p>MacMurray, Public Citizen</p> | |
| P | MacMurray | 19 | | | <p>Figure</p> <p>The directly-measured portion of the NH temperature should be displayed as a trace distinct from the reconstruction, rather than splicing the two together, in order to clarify which portion is which and at what date the changeover occurs.</p> <p>MacMurray, Public Citizen</p> | Thank you. The figure has been removed. |
| P | MacMurray | 19 | | | <p>Figure Caption</p> <p>References should be included for the NH temperature reconstruction, the millennial CO2 concentrations, and the carbon emissions due to fossil fuel use and land-use changes.</p> <p>MacMurray, Public Citizen</p> | Thank you. The figure has been removed. |
| P | Meyer | 19 | | | <p>Figure</p> <p>The temperature analysis included in this chart has been shown in many sources to be deeply flawed. However, I will focus on just one issue: The inflection in the slope of the temperature line from flat to upward sloping c. 1900 occurs at the exact same location where two entirely different data sources are spliced. Tree rings are used to the left, with instrumental temperature readings to the right. The fact that the inflection point occurs exactly at the splice between two unrelated data sets should greatly reduce our confidence in the analysis, particularly since tree ring data in the 20th century has failed to show the same upward inflection. A more likely conclusion than the one reached here is that tree ring data understates temperature variability in the past, just as it is understating temperature variability in the present. A pithier statement would be that trees don't make very good thermometers, as their growth is regulated by far more than just temperature</p> <p>This divergence problem can be seen clearly in the Fourth IPCC Assessment, despite attempts to hide it. Here is a the chart on historical temperature reconstructions</p> | Thank you. The figure has been removed. |

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| | | | | | <p>from that report: Note: Figures inserted. Part of electronic file) And here is a closeup of the 20th century One can clearly see that the trees show the 20th century to be unremarkable. Meyer, Climate-Skeptic.com</p> | |
| P | Michaels | 19 | | | <p>Graph Nice to see the “Hockey Stick” is still unchallenged here.</p> <p>Recommendation: At least use a multiple compilation for comparison! IPCC AR4 Figure TS.20 (p55) would be a good candidate. As it now stands, the statement fails to meet the authors’ claim of representing the “the best available science” (p. 14) and of conveying “the most relevant and up-to-date information possible” and otherwise violates applicable objectivity requirements. Michaels, Cato Institute and University of Virginia</p> | Thank you. The figure has been removed. |
| P | Peden | 19 | | | <p>Figure: Caption: This 1000-year record tracks the rise in carbon emissions due to human activities (fossil fuel burning and land clearing) and the subsequent increase in atmospheric carbon dioxide (CO2) concentrations and air temperatures. The earlier parts of the Northern Hemisphere temperature reconstruction shown here are derived from historical data, tree rings, and corals, while the later parts were directly measured.</p> <p>Suggested change: Delete both Figure and Caption.</p> <p>Rationale: the Mann tree-ring Hockey Stick reconstruction has been definitively shown to be unscientific, with a supportive finding to this effect by the NAS. NCDC's inclusion of Figure fully discredits NCDC's whole Report. Ipcc's 4AR has also recognized the incorrect nature of the Figure and thus has not carried it through from the TAR. The venerable NCDC must not be seen as being "behind the curve", especially that curve. Peden, Public Citizen</p> | Thank you. The figure has been removed. |
| P | Singer | 19 | | | <p>Figure The USP suggests, in a graph on page 19, that the 20th century is in some way unusual and the warmest in the last 1,000 years. This graph, of course, will be recognized as the notorious “hockey-stick” curve, which was featured in the third IPCC Assessment [2001] but has been largely ignored in the latest IPCC report [2007].</p> | Thank you. The figure has been removed. |

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| | | | | | | <p>a. It is somewhat surprising that the USP author-team would use a discredited graph in their report. It is well accepted that the hockey-stick result, published by Mann, Bradley and Hughes [1999], is simply wrong -- especially after a thorough investigation by the National Research Council and by testimony of statistics expert Prof. Edward Wegman. Its result is based on the misuse of statistical analysis and on the emphasis on a particular group of tree-ring data. McIntyre and McKittrick [2003,2005], who first uncovered some of the problems of the hockey-stick, have shown that even a random set of data inserted into the MBH methodology would create a hockey-stick curve.</p> <p>b. Available publications using data from various independent sources show a Medieval Warming Period much warmer than the current one. We are referring here to the proxy-data paper by Loehle [2007], the ocean sediment data of Keigwin [1996], and the ice-core data of Dahl-Jensen [1999]. Their graphs are shown in the NIPCC report [2008] as figures 2 and 3. The Medieval Warm Period around 1000 AD is most clearly shown in figures 2b and 3b. As far as we know these results have not been credibly challenged and therefore should be accepted. ***The USP should make this fact quite clear.***</p> <p>c. It is possible that the author-team was not aware of the hockey-stick when they decided to use the graph in their USP report. Alternatively, they may have been aware of the current criticism but believe that the hockey-stick is valid. In that case, one would look for an appropriate discussion somewhere in the USP report; but we found none. It is also possible that the author-team was aware of the shortcomings of the hockey-stick but decided to display it anyway in order to convince the reader that human activities had somehow made the 20th century “unusual.” If that is the case, then the author-team should be censured for using deceptive practices.</p> <p>Conclusion Based on the historic record, the 20th century, during which CO2 levels rose sharply, is in no way unusual from a temperature point of view, indicating that the rise in CO2 has had little effect. Any use of the hockey-stick graph should be considered as deceptive. ***The graph should be deleted from the USP*** Singer, Science & Environmental Policy Project</p> | |

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|  | P | Singer | 19 | | | <p>Figure</p> <p>The hockey-stick graph on page 19 also shows the rapid rise of CO2 emissions and CO2 levels. It implies a correlation between CO2 and temperature. However this is not the case.</p> <p>a. In general, a correlation does not indicate causation.</p> <p>b. During the past 100 years there were periods during which temperatures declined while CO2 levels increased, for example during 1940-75 -- and more recently, since 1998. In other words, there was a negative correlation between temperature and CO2 – which certainly does not mean that CO2 would cause a cooling.</p> <p>c. The Vostok ice-core data show some striking correlations between temperature and CO2. However, a closer examination with higher time resolution shows that the temperature increases preceded the CO2 increase by few centuries. In other words, the temperature increase caused CO2 to increase, probably by releasing it from a warming ocean [Fischer 1999].</p> <p>Conclusion</p> <p>The CO2 temperature correlation suggested by the graph on page 19 is deceptive in that it would seem to indicate to the unwary reader that the CO2 increase is responsible for the temperature increase. ***The graph and associated assertions should be eliminated.***</p> <p>Singer, Science & Environmental Policy Project</p> | <p>Thank you. The figure has been removed.</p> |
| | P | Webster, R. | 19 | | | <p>Figure & Caption</p> <p>This entire chart is completely misleading as it is configured. First, it uses the highly discredited “hockey stick” curve that is based on fundamental errors in the application of elementary statistical techniques. Moreover, the “hockey stick” curve, as stated in the caption, is based on data stitched together “... earlier parts of the Northern Hemisphere temperature reconstruction shown here are derived from historical data, tree rings, and corals, while the later parts were directly measured.” Data sets that are stitched together in this manner are inappropriate for the statistical techniques applied to produce the “hockey stick” curve and are one of the reasons why that curve has been completely discredited by peer review. The curve has been dropped by the IPCC in their most recent assessment report due to the gross errors in its construction. Evidently, its initial inclusion in the SAR was made in an effort to try to wipe out the inconvenient Little Ice Age and Medieval Warm Period natural</p> | <p>Thank you. The figure has been removed.</p> |

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| | | | | | | <p>climate variations of the past 2000 years. The chart was never peer reviewed prior to acceptance by the IPCC for its SAR. Subsequent peer review has shown it to be essentially a fabrication based on inappropriate statistical techniques, sloppy data handling, and deeply flawed methodology. It has no legitimacy and its inclusion in this report furthers the illegitimacy of any statements and conclusions regarding AGW by this report. Second, the two other graphs showing changes in atmospheric CO2 concentration over 1000 years are highly misrepresentative of both overall atmospheric CO2 concentration and the human contribution to atmospheric CO2 concentration for the following reasons: (1) overall concentration is shown on a scale of 260 ppm to 380 ppm. This is a highly selective range and is not representative of the long climate history that shows this to be a very low historic range of atmospheric CO2 concentration. Actual CO2 concentrations have exceeded 4000 ppm for as much time as they've been below 400 ppm. Jurassic atmospheric CO2 ranged as high as 25 times what it is today without any adverse effects. Low estimates for atmospheric CO2 derived from dry analysis of polar ice cores are subject to dramatic underestimates of actual historic levels of CO2 (A Primer on CO2 and Climate, Howard C. Hayden, Figure 8, "Phanerozoic Carbon Dioxide" pg 10, 2007). Dry analysis of air bubbles trapped in ice cores to recreate atmospheric CO2 is the least accurate and most controversial method for obtaining a proxy record of atmospheric CO2 and is considered the least representative of actual historic CO2 change (Global Warming in a Politically Correct Climate, M. Mihkel Mathiesen, 2001, pp 112-128). The caption states that the historic atmospheric CO2 chart based on ice core data, but does not tell us whether it is based on Greenland ice core data or Antarctic ice core data, but in any event, ice core data is biased toward lower readings than are produced by other more accepted and less controversial methods (e.g., "wet" analysis of ice cores, chemical analysis) which reveal concentrations of atmospheric CO2 at levels nearly 500 ppm in the Northern Hemisphere during the past 1000 years along. Longer-term analyses show much higher levels of atmospheric CO2 are the norm, exceeding 1000 ppm and ranging up to 6000 to 8000 ppm over most of the past 540 million years. Consequently, the portrayal of historic atmospheric concentration over such a narrow band is highly misleading as most readers of this report are not going to be aware of the long history of much higher concentrations, a considerable portion of which occurred during deep ice eras when the Earth was nearly completely covered in ice. (2) The chart representing human impact on atmospheric CO2 from both fossil fuels and land-use changes is presented in a different scale and basis than the historic evidence (as flawed as that might be).</p> | |

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| | | | | | This is a completely erroneous method for illustrating the context of human influences against natural influences. In order to provide a legitimate basis for comparison, the human impact must be presented in ppm on the same scale as the background historic trend for atmospheric CO2 concentration. Again, it appears obvious that great effort is being made to create a false picture that grossly exaggerates the human influence on climate change. As it stands, this graph is completely erroneous and misleading. -- Webster, (Retired DA/DoD) | |
| P | Williams | 19 | | | Graph Delete. This is a version of the Mann hockey stick which has been totally discredited. Mann was forced to make a correction (Science) and has not released his data for independent review. In the report, Temperature Trends in the Lower Atmosphere: Steps for Understanding and Reconciling Differences. Thomas R. Karl, Susan J. Hassol, Christopher D. Miller, and William L. Murray, editors, 2006. A Report by the Climate Change Science Program and the Subcommittee on Global Change Research, Washington, DC. on page 14 “In order to encourage further independent scrutiny, data sets and their full metadata (i.e., information about instrumentation used, observing practices, the environmental context of observations, and data-processing procedures) should be made openly available.” Mann has not done this. Instead he belittles and withholds data. (Professor Wegman’s Committee for the National Academy of Science) The orientation of the graph distorts the fact that CO2 rise follows temperature by 800 +/- 200 years. (Nicolas Caillon, et al., Timing of Atmospheric CO2 and Antarctic Temperature Changes Across Termination III. Science Magazine: Vol 299, March 14, 2003: Page 1728). If correct, the current rise in CO2 is due to the Medieval Warm Period and not human-caused. Williams, Public Citizen | Thank you. The figure has been removed. |
| P | Stouffer | 19 | 1 | | End of paragraph There was also a small ozone hole (reduction) over the North Pole too Stouffer, GFDL/NOAA | Thank you. Your point is noted. |
| P | Webster, R. | 19 | 1 | | Paragraphs 1 & 2 Both these paragraphs are laced with inaccuracies. The first sentence of the first paragraph makes an assumption that human emissions of heat-trapping gases are sufficient to affect global climate. There is no validated scientific evidence to | Thank you. These paragraphs have been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |

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| | | | | | support this contention. The second sentence draws the completely erroneous conclusion that converting forests to farming and urban heat island effects (“... replacing wild lands with agriculture and cities ...”) will produce “... a slight cooling influence, as they have made the surface more reflective.” That is absolute nonsense. Real world observation (at an elementary level) tells us that forests are cooler than fields and that the net influence of cities is warming, sometimes significant warming, in the immediate vicinity. The obvious conclusion one must draw from this erroneous information is that there is a very concerted effort being made to magnify the actual impact of human emissions of heat-trapping gases while minimizing the effects of other human influences. -- Webster, (Retired DA/DoD) | |
| P | Keillor | 19 | 2 | | Here is the first mention and example of a “feedback loop” in this report. Readers may not understand the meaning and significance of feedback loops and need to be acquainted with the feedback loop concept and with other feedback loops that contribute to more rapid or extreme, climate changes than would otherwise take place. The feedbacks of thawing Arctic land and melting sea ice are additional examples to use. Mention significant feedback loops that seem likely to lessen the impacts of warming. The report’s avoidance of adjectives “positive” and “negative” in identifying feedbacks seems wise, since the meanings of those terms are counter-intuitive to many people. Keillor, ASFPM | Thank you. The suggestion has been considered, but the author team has decided to retain this as is. |
| P | Kruk | 19 | 2 | 5 | add the word “positive” in front of “feedback loop”. Kruk, NCDC | Thank you. The suggestion has been considered, but the author team has decided to retain this as is. |
| P | MacMurray | 19 | 2 | 3 | Change “... more moisture), which in turn leads to more warming.” to “... more moisture), which in the absence of other effects, in turn leads to more warming.” Also add a new sentence after “...feedback loop.” as follows: “Increased moisture also gives rise to more clouds, which due to their reflective properties may limit the magnitude of the feedback effect. “ MacMurray, Public Citizen | Thank you. The suggestion has been considered, but the author team has decided to retain this as is. |
| P | Tateman | 19 | 2 | | Water vapor is the most important and abundant greenhouse gas in the atmosphere. Human activities have only a small direct effect on water vapor, but a large indirect effect. The indirect effect occurs because the warming caused by human-produced increases in greenhouse gases leads to an increase in water vapor (a warmer climate increases evaporation and allows the atmosphere to hold more moisture), which in turn leads to more warming. This is referred to as a “feedback loop.” Thus, human-induced warming is indirectly responsible for the | Thank you. The suggestion has been considered, but the author team has decided to retain this as is. |

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| | | | | | <p>significant observed increase in water vapor that is fueling much of the warming.</p> <p>All completely backwards. water vapor acts to ameliorate the atmospheric dynamic not accentuate it. True, it is the most important GHG, in reality it is the only one! CO2 is just around to feed us all. We are Carbon based after all! Grade "F"</p> <p>Tateman, Public Citizen</p> | |
| P | Webster, R. | 19 | 2 | | <p>Last 4 sentences</p> <p>States: “Human activities have only a small direct effect on water vapor, but a large indirect effect. The indirect effect occurs because the warming caused by human-produced increases in greenhouse gases leads to an increase in water vapor (a warmer climate increases evaporation and allows the atmosphere to hold more moisture), which in turn leads to more warming. This is referred to as a “feedback loop.” Thus, human-induced warming is indirectly responsible for the significant observed increase in water vapor that is fueling much of the warming.” This is the IPCC assumption used to drive their computer simulation models. It has been demonstrated to be an incorrect view of reality. The IPCC does not include cloud formation and precipitation resulting from increased water vapor due to increased atmospheric CO2 in its model processes. Recent research confirms the work of Christopher Monckton (prepared for the American Physical Society, APS and published in their July 2008 newsletter, Physics & Society) that reveals the error in the feedback assumed by the IPCC. In reality, the feedback is virtually neutral and the sign could be negative (i.e., cooling could result) when the impact of clouds and precipitation are considered. Consequently, this paragraph reflects old, discredited thinking and needs to be stricken as written. Revision should include both the possibility that warming, cooling, or no discernible change could result. -- Webster, (Retired DA/DoD)</p> | <p>Thank you. The suggestion has been considered, but the author team has decided to retain this as is.</p> |
| P | Kruk | 19 | 3 | | <p>The paragraph ends without saying anything concrete about the affect of aerosols in future climates. For the casual reader, one additional sentence that says something more definitive about whether the aerosols are masking or increasing the warming trends is needed. Something like “Thus aerosols can either mask or increase the warming caused by increased levels of greenhouse gases, but current research leads scientists to believe the latter is a more likely scenario.”</p> <p>Kruk, NCDC</p> | <p>Thank you. This paragraph has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text.</p> |
| P | Kruk | 19 | 4 | 6 | <p>last sentence beginning with “While these changes...”, comment: The issue with this sentence is that people are pretty aware of the urban heat island and the idea that urbanization has acted to warm, rather than cool, air temperatures. Thus, this</p> | <p>Thank you. This paragraph has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text.</p> |

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| | | | | | <p>final sentence is likely in contradiction to the current understanding of urbanization and its impacts on local temperatures. Suggestion is to either clarify the point trying to be made, or add a reference that supports the mentioned claim of a ‘cooling influence’.</p> <p>Kruk, NCDC</p> | |
| P | MacMurray | 19 | 4 | | <p>Last sentence Include a reference for the assertion that human land use changes on net “...have made the surface more reflective.”</p> <p>MacMurray, Public Citizen</p> | Thank you. This paragraph has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Stouffer | 19 | 4 | | <p>Land use changes can have a potentially very large impact on the carbon budget/emissions.</p> <p>Stouffer, GFDL/NOAA</p> | Thank you. Your point has been noted. |
| P | Allen | 20 | | | <p>Box: The chart on page 20 is the biggest piece of propaganda since Goebbels! Water vapor is the major greenhouse gas and accounts for about 90% of the greenhouse effect and natural occurring CO2 accounts for a portion of the remaining percentage and of course man made CO2 amounts to an even smaller amount of the greenhouse effect. More importantly, the greenhouse effect has an upper limit and when CO2 increases it replaces water vapor! Please do a little scientific research and find the work done by Miklos Zagoni who recently recalculated the greenhouse equations and included the boundry of the atmosphere, which was not done when the equations were calculated many years ago.</p> <p>NASA satellites have been measuring water vapor for several years and the data shows that water vapor has decreased every year that the measurements have been made, validating the work of Zagoni! What also validates his work is the fact that temperatures have decreased for 51 (1934 the hottest year until about 1975 and from 1998 to date) of the past 76 years. And of course the decrease in temperature from Jan. 07 to Jan. 08 of at least 0.6 degree C is a modern record!</p> <p>Allen, Public Citizen</p> | Thank you. The chart has been revised and referenced. |
| P | Goklany | 20 | | | <p>Figure Please provide the methodology used to estimate the error bars.</p> <p>Goklany</p> | Thank you. The chart has been revised and referenced. |
| P | Haapala | 20 | | | <p>Graph The chart and the accompanying text fail to explain the current cooling of the lower troposphere and the surface. (see graph on page 26). Solar changes include irradiance, UV, solar wind, and magnetism. The latter two are ignored but may</p> | Thank you. The chart has been revised and referenced. |

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| | | | | | influence cloud cover.iv Also this chart illustrates a fundamental fault in the USP by artificially truncating the period under study. The warming and cooling influences are not sufficient to explain the Holocene Climate Optimum, the Medieval Warm Period and the Little Ice Age. The chart and comments must be reworked to reflect past warm periods and the current cooling or be eliminated. Without such a correction the USP fails to meet the authors' claim of representing the "best available science" (p.14) and the "best available evidence" (p.15) as well as violates standards of objectivity. Haapala, NIPCC | |
| P | MacMurray | 20 | | | Figure and caption The figure is labeled "1950 – Present", while the figure caption, first sentence, indicates it is for "...(about 1750 to the present)...". This inconsistency needs to be corrected. MacMurray, Public Citizen | Thank you. The chart has been revised and referenced. |
| P | MacMurray | 20 | | | Figure The pictured thin-line uncertainty estimate for "Total net human activities" (last line in figure) seems to be substantially less than the sum of the thin-line uncertainty estimates for the various components of human activity contribution in the lines above that. This is especially noticeable on the lower-bound side. This inconsistency should be corrected. MacMurray, Public Citizen | Thank you. The chart has been revised and referenced. |
| P | Presser | 20 | | | Figure: Title should read '1750-Present' and not '1950-Present' Presser, NIST | Thank you. The chart has been revised and referenced. |
| P | Stouffer | 20 | | | Top Banner Is this a virtually certain statement? The idea that it is a global average temperature assessment is missing. The statement as it stands is wrong and very misleading. Tone and balance Stouffer, GFDL/NOAA | Thank you. This statement has been revised. |
| P | Stouffer | 20 | | | Figure Title: 1950 should be 1750 Stouffer, GFDL/NOAA | Thank you. The chart has been revised and referenced. |
| P | Stouffer | 20 | | | Figure Caption Reference IPCC WG1 chapter or SPM Stouffer, GFDL/NOAA | Thank you. The chart has been revised and referenced. |
| P | Tateman | 20 | | | Figure The Ocean and the absolute total affect it has on our climate is not even mentioned. Where is your head??? You just won the Darwin award. Not even Gradable!! | Thank you. The chart has been revised and referenced. |

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| | | | | | Tateman, Public Citizen | |
| P | Webster, R. | 20 | | | <p>Banner</p> <p>The header states: “Human-caused changes in the emissions of heat-trapping gases are responsible for most of the warming observed over the past 50 years.” This is a completely speculative statement not supported by any validated scientific process. While it is the conclusion of the most recent IPCC report (clearly, a political document based on selective use of scientific information), the IPCC position is in deep trouble as a consequence of (1) failures of the IPCC AGW theory predictions to be observed in the real world (e.g., lack of predicted polar warming, missing tropical mid-troposphere greenhouse warming “fingerprint”, ocean cooling, global atmospheric cooling), (2) IPCC’s faulty assumptions about the sign and strength of feedback of increased CO2 on water vapor effects, (3) IPCC’s failure to analyze historic climate variability and its causes so that any potential human impact can be put into proper context, (4) IPCC’s failure to accurately address cooling effects of cloud formation, precipitation, and atmospheric distribution/dissipation of heat by convection and advection in computer simulation models, and, (5) IPCC’s failure to adequately subject the computer simulation models (upon which they so heavily depend) to a proper verification/validation process. There is no validated scientific research to support the contention of this statement and if not removed it renders this paper illegitimate. -- Webster, (Retired DA/DoD)</p> | Thank you for your comment. This statement has been revised. |
| P | Webster, R. | 20 | | | <p>Figure & Caption</p> <p>There are two obvious problems with this chart and its caption: (1) it includes only solar irradiance as the sole natural process affecting climate and completely omits all other sources of natural variability, some of which may not be known (since no validated scientific research has identified all natural components of climate change), and, (2) estimates of human impact on climate are solely based on computer simulations that, in turn, are based on faulty assumptions (CO2 feedback grossly overestimated) and speculation and do not include known influences on atmospheric cooling that arise from increased atmospheric CO2 concentration (e.g., cooling effect of cloud formation and precipitation, among other cooling factors). This chart needs to be corrected but cannot be and should be removed because the state of climate change science is not well enough researched to produce an accurate chart of this nature. -- Webster, (Retired DA/DoD)</p> | Thank you. The chart has been revised and referenced. |
| P | Knappenberger | 20 | 1 | 2 | <p>Hmm. Actually, over the past decade, global temperatures have risen little. The</p> | Thank you. This paragraph has been modified due to other review |

Unified Synthesis Product: Global Climate Change Impacts in the United States (1st Draft)

July/August 2008 Reviewer Comments and Responses (Final Revision, 1/12/09)

Comment Type: BR – Blue Ribbon Panel, CC – Climate Communicators, G – U.S. Government, P – Public

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| | | | | | <p>reason? The combination of ENSO, volcanoes, and solar variability has acted to largely offset the warming pressure from increasing greenhouse gas concentrations.</p> <p>Recommendation: Better clarify that natural factors still play a large role in the actual global temperature variations. Anyone can see that temperatures have not “risen sharply” over the past decade and so as to prevent the reader from getting the wrong idea (the perhaps global warming has stopped), it is best to explain the reasons for the slowdown in the temperature rise.</p> <p>Knappenberger, New Hope Environmental Services</p> | <p>comments and the issue addressed by this comment is no longer pertinent to the document text.</p> |
| P | MacMurray | 20 | 1 | | <p>Last sentence & Figure</p> <p>The last sentence says “These natural factors cannot explain the warming of recent decades; in fact, their net effect on climate has been a slight cooling influence over this period, ...” However, the associated figure (labeled “1950 – Present”, presumably covering the same period), indicates a net warming influence from natural factors. This inconsistency needs to be corrected or explained.</p> <p>MacMurray, Public Citizen</p> | <p>Thank you. This paragraph has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text.</p> |
| P | MacMurray | 20 | 1 | | <p>Last sentence</p> <p>Rather than using the vague terms “significant fraction” and “some of it” to describe the amount of carbon dioxide remaining in the atmosphere after 1000s and 100,000s of years (respectively), provide actual numbers (even if approximate).</p> <p>MacMurray, Public Citizen</p> | <p>Thank you. The chart has been revised and referenced.</p> |
| P | Webster, R. | 20 | 1 | 1 | <p>This statement is erroneous. There are a large number of natural processes, not all of which are likely to be known, that influence climate. The extent to which there are interactions/interrelationships between these processes, how strong they are relative to each other, and the ultimate impact they have on climate change is not known with sufficient confidence to draw meaningful conclusions about future climate change. Among the processes not fully understood or quantified are the cosmic radiation influence on cloud formation (which is influenced not only by solar activity, but by our solar system’s motion through our galaxy), ocean and atmospheric steering currents, Earth’s orbital & rotational characteristics, to name a few. There are other potential sources of climate influence, not the least of which involve changes in ocean chemistry and temperature due to long-term effects of undersea changes (volcanic action, deep-sea heat venting, etc.). The only measure of solar activity the report attempts to address is solar irradiance. There are significant other solar variations that have the potential to strongly influence short-term (decadal/century)</p> | <p>Thank you. This paragraph has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text.</p> |

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| | | | | | scale climate, namely: solar magnetic flux, sunspot activity and frequency (highly correlated with known cool periods, including the Little Ice Age), and the effect of solar wind on cosmic radiation penetrating Earth’s atmosphere. These should not simply be ignored, particularly in light of the very high correlation between solar activity (not just irradiance) and Earth’s global climate during much of the past 100 years. Indeed, there is virtually no correlation between atmospheric CO2 and climate variation over decadal/century timeframes whereas the correlation between solar activity and global temperature is very high over that same timeframe. -- Webster, (Retired DA/DoD) | |
| P | Webster, R. | 20 | 1 | 2 | “Over the past several decades, the time during which the human influence has become clear and global temperatures have risen sharply, the Sun’s output, as measured by satellites, has followed its usual 11-year cycle of small ups and downs but with no net increase over the period.” This is an inaccurate statement and does not represent observed reality over the past several years. There is no clear “human influence” over the “past several decades” (this is an assumption not proven, nor supported by observation). The current solar cycle has produce either zero sunspots or sunspots so weak that they are not detectible. This condition has led to significant global cooling on a decadal scale in the past and was the one dominant solar feature of the Little Ice Age. It cannot be so cavalierly dismissed as irrelevant, particularly in view of the fact that it happens to coincide with the recent drop in both ocean and atmospheric global temperatures. Forecasts of global cooling through at least 2015 and possibly 2035 are based on this dynamic and there is general agreement in the scientific community of atmospheric scientists with the prognosis through 2015. There is no validated scientific research that has detected any human influence in recent climate variability. Statements that suggest otherwise are pure speculation built upon unsubstantiated (and, in some cases, refuted) assumptions. This statement must be revised to remove all speculation. -- Webster, (Retired DA/DoD) | Thank you. This paragraph has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Webster, R. | 20 | 1 | 4 | Inaccurate statement: “These natural factors cannot explain the warming of recent decades; in fact, their net effect on climate has been a slight cooling influence over this period, which is small compared to the large warming influence of the human-caused increases in heat-trapping gases.” There is no validated scientific research that has even detected any human influence in recent climate variability from any source. To state that “which is small compared to the large warming influence of the human-caused increases in heat-trapping gases” are responsible for warming in recent decades is erroneous and cannot be supported by validated scientific research. | Thank you. This paragraph has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |

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| | | | | | Consequently, the material beginning with “, which is small ...” should be completely removed and the sentence ended with “... over this period.” -- Webster, (Retired DA/DoD) | |
| P | Goklany | 21 | | | Figures on 21, 22 Please provide error estimates on these figures. Goklany | Thank you. These figures have been altered and/or deleted. References have been added for remaining figures. |
| P | Meyer | 21 | | | Figure-Change in Average Global Temperature Even taking into account smoothing, the temperature record in this chart does not appear consistent with the 20th century temperature chart on page 19 (page 19 appears to have more 20th century warming than page 21) This is consistent with my observation that this report appears cut and pasted from multiple sources without any kind of consistency check or reconciliation. Meyer, Climate-Skeptic.com | Thank you. These figures have been altered and/or deleted. References have been added for remaining figures. |
| P | Michaels | 21 | | | Figure-Bottom No reference is given under “Figure sources” (page 181). I have never seen this chart published as an “observed global temperature”. It certainly is at variance with the IPCC history. Compare to the chart on page 22. In fact, the chart labeled “Change in average global temperature” is not an observed temperature product at all, but instead it is the average of 5 model runs from a climate model (see Hansen et al, 2005—your citation 38 for a complete explanation). Recommendation: Remove this chart and replace it with a real version of the global temperature history. As it now stands, the statement fails to meet the authors’ claim of representing the “the best available science” (p. 14).. Michaels, Cato Institute and University of Virginia | Thank you. These figures have been altered and/or deleted. References have been added for remaining figures. |
| P | Sherwood | 21 | | | 2nd figure: either the units on y-axis need to be "C/yr", or the caption needs to say "change from previous year" (or whatever the time period was, I assume 1 year). Sherwood, Yale University | Thank you. These figures have been altered and/or deleted. References have been added for remaining figures. |
| P | Stouffer | 21 | | | Figure 2 – Title Add “observed surface” before “temperature”. Stouffer, GFDL/NOAA | Thank you. These figures have been altered and/or deleted. References have been added for remaining figures. |
| P | Tateman | 21 | | | Carbon release and uptake. A temperature chart is shown that is a nice graphic of the paucity of clean data acquisition, all that this chart shows is UHI, Urban Heat Island effect. Also in the text a mention of Oceanic CO2 uptake is made, but it too is backwards, saying that it is decreasing, which it was for the last 30 years because the ocean was | Thank you. These figures have been altered and/or deleted. References have been added for remaining figures. |

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| | | | | | | <p>relatively warmer, now that it has rolled over to a cooler state the CO2 will , and has started to decline, look at your latest January to June 2008 numbers. Down is good? Cooler is better? We will wait and see. Grade "D-" Tateman, Public Citizen</p> | |
| | P | Webster, R. | 21 | | | <p>Graph-Top The first graph, “Separate Factors Affecting Climate/Over the Last Century” is flawed because it includes different factors having different levels of confidence supporting them. This practice makes for a less than accurate portrayal of reality. The red line chart purporting to show the “forcing” from “Human-induced Greenhouse Gases” is based on a greatly over-estimated assumption the IPCC uses to drive climate change simulation models. There is no validated scientific research to support a level of 3.0 W/m2 and, in fact, a recent analysis published in the July 2008 APS newsletter, Physics & Society, by Christopher Monckton (Third Viscount of Brenchley) examines the estimate used by the IPCC and concludes that a more accurate figure would be in the range of +/- 1.0W/m2 or about the same as this graph shows for the 1950s. Lord Monckton’s paper has, to this date, survived various attempts at rebuttal (which have been thoroughly refuted). Since this is the curve that tends to drive the whole point of the graph, the graph is not representative of settled science and should be eliminated as at best controversial. The second graph, “Change in Average Global Temperature,” which is produced over the same 1880-2004 timeframe, demonstrates nothing more than the following: (1) the general climate trend since 1885 has been steady and upward at a rate of approximately 0.65°C/century, (2) average global temperatures leveled off in 2000 and remained stable through 2004. These observations fly in the face of the IPCC’s AGW theory and do not support the conclusions this report is based upon. Furthermore, average global temperature has dropped over the past two years (0.7°C) by more than it increased from 1885 to 1985! Consequently, the caption statement, that the “... strong warming effect caused by the human-induced greenhouse gases (red line on top graph) more than compensated for the cooling caused by particle pollution and a series of volcanic eruptions that produced short-term cooling effects.” is not only unsupported by validated scientific research, it is refuted by both analytical examination (Lord Monckton’s analysis for the APS) and real world observation (global average temperature over the past eight years). Clearly, there are natural processes at work that have not been adequately researched. Indeed, the IPCC makes no attempt to discover natural climate change forces that have obviously been at work since well before the beginning of the Industrial Age. The caption analysis</p> | <p>Thank you. These figures have been altered and/or deleted. References have been added for remaining figures.</p> |

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| | | | | | fails to note the more important features of the second graph, noting only the volcanic episodes that generally lead to some degree of cooling. Nowhere is there any consideration given to the longer term effects of volcanic eruptions venting heat-trapping gases into the atmosphere or the continuous very intense heat sources from active volcanoes, both on land and undersea, that continuously contribute to atmospheric warming on some scale. There is no countervailing continuous source of cooling because cooling effects from volcanic activity tend to be very short term and immediate, vs. the steady longer term venting of heat-trapping gases and intense heat into the atmosphere by active volcanoes. The incomplete nature of climate change science renders any speculative analysis based on unsubstantiated assumptions a highly risky venture. This is precisely the nature of the IPCC analyses as conveyed by summary reports for policymakers and upon which this draft report so completely relies. -- Webster, (Retired DA/DoD) | |
| P | Zamarra | 21 | | | the information on this page (21) and the information on page 40 needs to be consistent on carbon lifetimes. Zamarra, STG, Inc. | Thank you. These portions of the text have been revised. |
| P | Webster, R. | 21 | 1 | 1 | “... about 45 percent of the carbon dioxide emitted by human activities in the last 50 years has been taken up by these natural ‘sinks.’ The rest has remained in the air, increasing the atmospheric concentration ³ .” This statement is contrary to the vast majority of scientific research published since 1957 based on actual measurements that address the residence time of CO ₂ in the atmosphere. The vast majority of uncontested scientific research puts the residence time at between 5 and 10 years, with a very few suggesting a greater residence time and none that begin to approach the 50-200 years assumed by the IPCC and upon which the report bases its statement. The IPCC offers no contrary evidence and there has been no measurement to validate the IPCC figures that apparently are derived from model simulations! (The Deniers, Lawrence Solomon, “Chapter Six, Looking for CO ₂ ” with contributions by Tom Segalstad, Nir Shaviv, Syun-Ichi Akasofu, Robert Carter, et al., pp 82-83, 2008) Consequently, this statement is erroneous and based upon flawed assumptions that cannot be validated. -- Webster, (Retired DA/DoD) | Thank you. Additional information on carbon dioxide sinks has been added to the document. |
| P | Webster, R. | 21 | 1 | 1 | (and 4th sentence) “A significant fraction of the carbon dioxide emitted by human activities remains in the atmosphere for thousands of years, and some of it will be there for hundreds of thousands of years ⁴ .” While the cited reference cannot be reviewed at this time, | Thank you. Additional information on carbon dioxide sinks has been added to the document. |

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| | | | | | there is the obvious problem that this statement flies in the face of all known scientific research into the residency time of CO2 in the atmosphere. It even dwarfs the model results assumed by the IPCC to justify its model drivers (a fine example of trying to validate one model with another where both are driven by assumptions that reflect the conclusion desired!). Any attempt to estimate residency over such incredibly long periods must necessarily explain why analyses based on actual measurements suggest a residency of only 5-10 years! (The Deniers, Lawrence Solomon, "Chapter Six, Looking for CO2" with contributions by Tom Segalstad, Nir Shaviv, Syun-Ichi Akasofu, Robert Carter, et al., pp 82-83, 2008) This statement appears to lack credibility and should be omitted pending much further scientific review of the controversial conclusions of the cited reference (currently unavailable for review). -- Webster, (Retired DA/DoD) | |
| P | Webster, R. | 21 | 1 | | Added to review are additional pertinent comments excerpted from material by Viscount Monckton of Brenchley. (Note: Part of electronic file) Webster, (Retired DA/DoD) | Thank you for your submission. Noted. |
| P | Zamarra | 21 | 1 | | Paragraph within 'Carbon release and uptake' "A significant fraction of the carbon dioxide emitted by human activity remains in the atmosphere for thousands of years, and some of it will be there for hundreds of thousands of years." "...hundreds of thousands of years..." Really? How many peer-reviewed articles have said this? Is it just this one reference, which is 'in press'?? Perhaps rewording this sentence to say "...and some of it may be there for hundreds of thousands of years." Zamarra, STG, Inc. | Thank you. This has been updated. |
| P | Keillor | 21 | 2 | | The accelerating and higher-than- expected emissions of carbon dioxide and other greenhouse gases need some explanation. Why do these emissions exceed the emissions scenarios used by the IPCC in the 2007 assessment reports? Have nations' economic growth exceeded assumptions used when emissions scenarios were developed? Has Arctic melting begun to release methane and other greenhouse gases trapped in permafrost? Keillor, ASFPM | Thank you. Additional information on carbon dioxide emissions has been added to the document. |
| P | MacMurray | 21 | 2 | 2 | Do the growth rate, total emissions, and emissions scenario refer solely to carbon dioxide? Clarify this, and if so, add a sentence with information for the total | Thank you for your comment. Additional information on carbon dioxide sinks has been added to the document. |

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| | | | | | carbon-dioxide equivalents of all anthropogenic greenhouse gases. MacMurray, Public Citizen | |
| P | Stouffer | 21 | 2 | 3 | are higher than – Add “slightly” before “higher”. Stouffer, GFDL/NOAA | Thank you. This paragraph has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Stouffer | 21 | 2 | 3 | IPCC – Add “in 2000” after “Climate Change” Stouffer, GFDL/NOAA | Thank you. This paragraph has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Webster, R. | 21 | 2 | | 2nd & 3rd paragraphs: These paragraphs discuss the growth rate of atmospheric CO2 and suggest an urgency due to a rapid increase in the growth rate since 2000. The inconvenient truth is that there is no established link between changes in atmospheric CO2 and climate change/variability, despite all the computer simulation model runs by the IPCC. The IPCC models are incomplete and do not reflect natural climate variability forces (because the IPCC found it inconvenient to address those forces with anything near adequacy). Model output has little value beyond providing generalized projections based on assumptions and limited knowledge. The IPCC misuses those results by predicting future climate trends, a use to which they are not suited. Much concern is shown for a rapid increase in CO2 emissions because of a speculated reduction in carbon dioxide uptake by oceans and vegetation. The operative text is “... appears to be decreasing in recent years ...”, a far from definitive statement. Once again, this report relies heavily on IPCC speculation confirmed only by misused IPCC model simulations, both of which have been demonstrated in numerous instances to be deeply flawed. These paragraphs are pure speculation and amount to little more than fear-mongering alarmism. -- Webster, (Retired DA/DoD) | Thank you. These paragraphs have been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Kruk | 21 | 3 | 1 | this sentence needs a reference. If carbon dioxide intake by oceans is ‘decreasing’, then how does one account for the increasing acidification of the oceans? Does this imply that the oceans are “too full” to take on any more CO2? Or, is there some equilibrium level that will eventually be reached between the CO2 content in the atmosphere and oceans? Another clarifying sentence or two is probably warranted to discuss these points. Kruk, NCDC | Thank you. This paragraph has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Stouffer | 21 | 3 | 1 | There is lots of uncertainty in the estimates of these fluxes. The text does not mention the uncertainty Stouffer, GFDL/NOAA | Thank you. This paragraph has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Stouffer | 21 | 3 | | Last line: | Thank you. This paragraph has been modified due to other review |

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| | | | | | reduction is larger – The uncertainty in the estimates of the carbon fluxes is very large. Change “is” to “appears”. Stouffer, GFDL/NOAA | comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Williams | 21 | 6 | | “Model simulations suggest that land and ocean carbon dioxide sinks would become less efficient as climate warms, but the magnitude of the observed reduction is larger than that projected by the models6.” The fact that the magnitude of the CO2 reduction is larger than the models “projected” is another indication that the models are wrong. Williams, Public Citizen | Thank you. This paragraph has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Allen | 22 | | | Figure- Upper right: The temperature chart on page 22 is a distortion as well; not showing that 1934 is the hottest year on record as well as not showing the decrease in temperature since 1998. If you folks want to have any credibility at all, you will provide actual facts and data and remove the propaganda! Allen, Public Citizen | Thank you. This figure has been appropriately referenced. |
| P | D’Aleo | 22 | | | (Note: Dr. D’Aleo has sent in 23 pages of comments, along with multiple figures and graphs. These have all been placed in the Appendix. This is one of his comments that could be pasted in.) Figure – top of page There are major data coverage and integrity issues with the global and US data bases that require a third party review and corrections before release of any official report and any policy decisions are made. It is impermissible to make this claim that the warming is as depicted in the diagram on the cover page and on page 22 given the following, confounding research/findings. These include: (1) Major questions about the impact of major station dropout observed since 1990 (2) Major questions about the handling of the missing data, which has in many large regions also increased dramatically since 1990 (3) Major issues as to how urbanization and land use (siting) changes, clearly man’s greatest effect on local climates, are handled. (4) Lack of visibility into the adjustments being made to the raw data. Some parts of this key process like time of observation adjustments are well | Thank you for your comments and submission. We believe that this figure is scientifically sound. It has been appropriately referenced. |

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| | | | | | | <p>documented and understood but most others are not. Data and documentation of the adjustments made is not being made available for independent review even when requests are being made through proper channels.</p> <p>(5) Some instrumentation changes have taken place without apparent adjustments for known biases</p> <p>(6) Ocean data given that 70% of the globe is ocean is critical to determining a global mean temperature. Changing methods not unlike changing instrumentation for land stations introduce biases and errors that must be properly accounted for. A potential remedy in the form of ARGO diving buoys is now in place, but the issue adds uncertainty to past assessment of global temperatures.</p> <p>THE DATA BASE ISSUES</p> <p>Though there has clearly been some cyclical warming in recent decades, the global surface station based data is seriously compromised by urbanization and other local factors (land-use /land-cover, improper siting, station dropout, instrument changes unaccounted for and missing data) and thus the data bases overestimate the warming. Numerous peer-reviewed papers in the last several years have shown this overestimation may be the order of 30 to 50%. Since the past temperature trends is the entire underpinning of the CCSP, and these issues are not properly addressed, the report itself should be put on hold and an independent third party audit of the temperature data bases and adjustments with full transparency is mandated. We can't make good policy decisions based on flawed, uncertain historical data. The major issues include:</p> <p>STATION DROPOUT</p> <p>Station drop-out has occurred-- from a peak of 6,000 stations in 1970 to 2,000 today. The biggest dropoff occurred around 1990. The plot was made with downloaded GHCN 2 data with Annual mean global temperature in degrees Celsius and number of stations. Many of the stations that were dropped were rural. A larger percentage of the stations remaining were urban. Notice the discontinuity of mean temperature at the same time as the dropoff suggesting a sampling error was introduced.</p> <p>(Note: Figure contained in this comment is located in the Appendix). To see for yourself how rapid and extensive this is, look at this animation of</p> | |

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| | | | | | reporting stations in recent decades, see the stations drop out rapidly around 1990. D'Aleo, Fellow of the AMS, CCM, WSI, Icecap | |
| P | Freitag | 22 | | | <p>Figure – Upper right: The plot indicates a nearly 1.0 F increase between 1975 and 2005, escalating upward. It is also commented that this is consistent with satellite data. However, satellite data shows a dramatically different signature over that time period (RSS, UAH), with any increase recently eliminated. Omission of satellite data appears to indicate publication bias. Recommend adding satellite data with references. Add some statement regarding the discrepancy and limitation of land based measurements. Without this, a lay person is likely to misinterpret.</p> <p>There is substantial evidence that surface based measurements are highly biased, with most stations in the US (presumably the best in the world) failing to meet what would be expected as minimum requirements for extrapolating global temperature. Widespread urban heat island and micro site biases have been documented (Watts, McIntyre, elsewhere). Recommend adding note or placement on the plot regarding wide error bounds and uncertainties with the data (applies throughout the document).</p> <p>Furthermore, NASA recently released, “The average temperature in January 2008 was 30.5 F. This was -0.3 F cooler than the 1901-2000 (20th century) average, the 49th coolest January in 114 years. The temperature trend for the period of record (1895 to present) is 0.1 degrees Fahrenheit per decade.” Recommend identifying discrepancy between surface and satellite measurements. (NOTE: Graphs included in his comment. Attached at end of collation for your consideration.) Freitag, Public Citizen</p> | Thank you. We believe that this figure is scientifically sound. It has been appropriately referenced. |
| P | Goklany | 22 | | | <p>Comment 6, above, noted that there were numerous potential problems associated with temperature data from the US surface network. Considering that there is no reason to believe that the US network is worse than other networks around the world, one must also be skeptical about the data from these other networks. In fact, there are several reasons to suspect that most non-US networks probably are plagued by many more problems because the US, being wealthier and having ample human capital at its disposal, has probably (a) devoted relatively more financial and human resources to operating and maintaining its monitoring</p> | Thank you. We believe that this figure is scientifically sound. It has been appropriately referenced. |

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| | | | | | network, and (b) has had less disruption from wars, domestic upheavals and their aftermath (as may have affected much of Europe from 1914 to perhaps into the 1920s or from the late 1930s to the late 1940s, Russia from 1914 through the 1920s and from the 1930s to the 1940s, China from the 1930s through possibly the 1970s, etc.) Accordingly, the same set of concerns raised above in conjunction with the US network also applies to other networks. Has the quality and integrity of these networks and their data been evaluated by the CCSP and/or authors of this report, or are the data they have furnished being adopted in good faith? CCSPO should review and evaluate these networks and the data they produce, before using them in a report that could have significant public policy consequences, and make the review available on a readily accessible website. Goklany | |
| P | Hagen | 22 | | | Graph-Global Temperatures Change the front Global Temperature graph to include the medieval warming and little ice age to show both historic and recent temperature changes. Hagen, AcrossTech | Thank you. We believe that this figure is scientifically sound. It has been appropriately referenced. |
| P | Herman | 22 | | | Graph – Global Temperature Indicates an increase in global temperature from about average (zero anomaly) in 1970 to about a 0.9 positive anomaly in 2005. This is a rise of about 0.9 degC in 35 years, or about 0.26 deg/decade, about twice the accepted rate of increase. Something is wrong here. Herman, University of Arizona | Thank you. We believe that this figure is scientifically sound. It has been appropriately referenced. |
| P | Stouffer | 22 | | | Figure, lower left (caption) What does the white area represent? Stouffer, GFDL/NOAA | Thank you. The figure has been removed. |
| P | Tateman | 22 | | | Temperatures are rising "NOT" Wrong on all counts! The Tropospheric satellite measures do not show warming, look at your own data. It is all Propaganda, I see red when I look at this nonsense. Grade "F" Tateman, Public Citizen | Thank you. We believe that this figure is scientifically sound. It has been appropriately referenced. |
| P | Zamarra | 22 | | | Graph – bottom left What does the color white signify (areas such as Antarctica, parts of S. America and areas near North Pole)? Zamarra, STG, Inc. | Thank you. The figure has been removed. |
| P | Haapala | 22 | 1 | | Serious omission. The text associated with the “Global Temperature” graph does not explain the paucity of data collection stations prior to 1950 and precipitous drop | Thank you. We believe that this figure is scientifically sound. It has been appropriately referenced and the caption has been updated. |

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| | | | | | <p>in these stations since 1990. Further the text does not explain the poor geographic distribution and sampling of these data collection stations. Many vast areas are ignored. Of the 2592 desired 5 degrees latitude by 5 degrees longitude grid boxes only 23 percent are now covered.v</p> <p>This unsubstantiated graph is used on the front page of the report. Omitting discussion of the weakness of the data is extremely serious; and if not included, the graph must be dropped on this page and on the cover. Without such a correction the USP fails to meet the authors' claim of representing the "best available science" (p.14) and the "best available evidence" (p.15) as well as violates standards of objectivity.</p> <p>Haapala, NIPCC</p> | |
| P | Haapala | 22 | 1 | | <p>Serious omission: The text references satellite observations since 1979 and states the observed patterns of tropospheric warming and stratospheric cooling are consistent with greenhouse warming. The issue is the extent of agreement among surface warming, tropospheric warming, and stratospheric cooling and how it appears globally.</p> <p>The satellite observations are the only comprehensive, rigorous temperature observations ever compiled. Thus, they are critical in understanding temperature trends and possible human contribution to temperature trends. Although the USP presents a graph (p. 26, "Global Temperature Changes in Different Layers of the Atmosphere) showing the satellite data, it does not present it in this, the most critical section. The satellite observations and trends as they appear superimposed on a globe must be presented and explained here. Without such a correction the USP fails to meet the authors' claim of representing the "best available science" (p.14) and the "best available evidence" (p.15) as well as violates standards of objectivity.</p> <p>Haapala, NIPCC</p> | Thank you. The text in question has undergone major revisions that we believe address the reviewer's concerns. The reviewer may re-examine the issue when the Second Draft is released for review. |
| P | Knappenberger | 22 | 1 | 1 | <p>Wrong. In fact, over the past 2-3 decades, the warming trend has been decelerating. (Note: Figure-HadCRUT3Temperature anomaly is inserted here. Part of electronic file)</p> <p>Recommendation: Remove statement about warming trend accelerating. Without such a correction, the statement fails to meet the authors' claim of representing the "the best available science" (p. 14) and otherwise violates applicable objectivity requirements.</p> | Thank you. The text in question has undergone major revisions that we believe address the reviewer's concerns. The reviewer may re-examine the issue when the Second Draft is released for review. |

Unified Synthesis Product: Global Climate Change Impacts in the United States (1st Draft)

PUBLIC COMMENTS

July/August 2008 Reviewer Comments and Responses (Final Revision, 1/12/09)

Comment Type: BR – Blue Ribbon Panel, CC – Climate Communicators, G – U.S. Government, P – Public

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| | | | | | Knappenberger, New Hope Environmental Services | |
| P | Meyer | 22 | 1 | 1 | The warming trend has actually decelerated over the last decade. Since about 1998, there has been no global warming at all. Below is the UAH satellite data for the globe. Satellite data is demonstrably better than ground based thermometers, since they are not subject to urban and other location biases and they have more complete coverage. (Note: figure inserted. Part of electronic file) I would have described this as deceleration. Meyer, Climate-Skeptic.com | Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re-examine the issue when the Second Draft is released for review. |
| P | Stouffer | 22 | 1 | 1 | Add the idea that attempts have been made to account for known errors: measurement, instrumental, sampling, urbanization, etc Stouffer, GFDL/NOAA | Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re-examine the issue when the Second Draft is released for review. |
| P | Stouffer | 22 | 1 | | Last line: increased melting of polar ice sheets – (The record is very short. Can these be strongly related to the warming? If not, delete. Stouffer, GFDL/NOAA | Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re-examine the issue when the Second Draft is released for review. |
| P | Zamarra | 22 | 1 | 2 | “...these measurements are independently compiled, analyzed, and processed by several different research groups.” It may be helpful here to list 1 or 2 of the actual research groups. Something like “...by several different research groups such as ABC Co. and DEF Co.” Zamarra, STG, Inc. | Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re-examine the issue when the Second Draft is released for review. |
| P | Herman | 22 | 2 | | This discussion is about satellite data showing warming in the troposphere and cooling in the stratosphere, as models predict. Yes, the models do predict this, but they also predict greater warming in the upper troposphere than at the surface, particularly in tropical regions. Satellite data (MSU data) does not show this, it shows the troposphere warming at about the same rate as the surface. This has been a large topic of discussion during recent years and the disagreement is not mentioned in the report. Herman, University of Arizona | Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re-examine the issue when the Second Draft is released for review. |
| P | Knappenberger | 22 | 2 | 5 | Actually, as shown by Santer et al. (2003, Science, 301, 429), the stratosphere is cooling largely because of ozone destruction, not an enhanced greenhouse effect. (Note: Figure – Influences on stratospheric temperatures (source: Santer et al., 2003, Science, 301, 429 is inserted here. Part of electronic file.) Remove statement about stratospheric cooling occurring because of increasing greenhouse gases, or better qualify it such that it refers to upper stratospheric | Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re-examine the issue when the Second Draft is released for review. |

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| | | | | | <p>temperature trends—not those measured by satellites. Without such a correction, the statement fails to meet the authors’ claim of representing the “the best available science” (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | |
| P | Knappenberger | 22 | 3 | | <p>The descriptions of the precipitation changes don’t match the figure very well. For instance, the text reads “Pronounced increases in precipitation over the past 100 years have been observed in eastern North America [the map shows no change in eastern North America], southern South America [the map shows no change in southern South America], and northern Europe. Decreases were observed in the Mediterranean [the map shows no change in the Mediterranean], most of Africa [the map shows Africa evenly divided between increases and decreases], and southern Asia.”</p> <p>Recommendation: Change either the map to better reflect the text or vice versa...and make sure that the both the text and the map reflect the most recent literature on precipitation trends.</p> <p>Knappenberger, New Hope Environmental Services</p> | <p>Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re-examine the issue when the Second Draft is released for review.</p> |
| P | Knappenberger | 22 | 3 | 12 | <p>Are there any regions that floods and/or droughts are decreasing in intensity and/or frequency? Or are such changes not of interest to the CCSP? Are they not impacts of a changing climate?</p> <p>Recommendation: Change text to reflect the fact that some precipitation changes have a positive impact in that they bring more water in a world to locations with growing demands on the water system. And also, state that the distribution of precipitation events is such that more total precipitation comes with more heavy precipitation events. Without such a correction, the statement fails to meet the authors’ claim of representing the “the best available science” (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | <p>Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re-examine the issue when the Second Draft is released for review.</p> |
| P | Stouffer | 22 | 3 | 1 | <p>Add “but most changes are not yet attributed to changes in GHG forcing</p> <p>Stouffer, GFDL/NOAA</p> | <p>Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re-examine the issue when the Second Draft is released for review.</p> |
| P | Haapala | 23 | | | <p>Figure</p> <p>The observations in the graph are based upon four stations in Switzerland. To extrapolate Global, or even European, trends from these four stations is absurd.</p> | <p>Thank you for your comment. The figure has been removed.</p> |

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| | | | | | <p>Yet, an undefined 2003 European temperature is inserted into the graph without any calibration with the four stations. The graph lacks scientific rigor and must be dropped. Without such a correction the USP fails to meet the authors' claim of representing the "best available science" (p.14) and the "best available evidence" (p.15) as well as violates standards of objectivity.</p> <p>Haapala, NIPCC</p> | |
| P | Herman | 23 | | | <p>Figure</p> <p>This figure shows the average summer tperature for 4 stations in Switzerland to demonstrate how much warmer the 2003 summer was than the other summers on record. Indeed, the 4 Swiss stations in 2003 were much warmer than all other summers. But, one must ask this question. What is the probability of finding a summer, where no region, anywhere in the world, experienced a heat wave with average temperatures about 2 degrees warmer than previously experienced in that region. In 2003, that region happened to be in Switzerland. . Severe heat waves occur every summer, somewhere in the world. This occurrence, by itself, is not an indication of Global warming and should not have been represented as such in this report. Why have the record cold and snow occurances in the southern hemisphere last winter not been mentionedG</p> <p>Herman, University of Arizona</p> | Thank you for your comment. This figure has been removed. |
| P | Knappenberger | 23 | | | <p>Figure: Caption</p> <p>The figure caption discusses European summer heat waves, but shows data for the average summer temperature from only Switzerland, then switches back to talking about enormous loss of life during the 2003 heat wave. The average summer temperature is an inappropriate substitute for 'heat wave' frequency or intensity. Is there an established relationship between the two? Further, the loss of life during the 2003 heat wave in Switzerland was much less than in other European locations (Grize et al., 2005).</p> <p>Recommendation: Change the figure to illustrate actual 'heat waves' and not the average summer temperature distribution. Also, if you want to illustrate an 'enormous loss of life' during the 2003, pick some place other than Switzerland. Basically, the existing figure and caption neither work well together, nor illustrate the point with any sort of scientific accuracy. Without such a correction, the statement fails to meet the authors' claim of representing the "the best available science" (p. 14) and otherwise violates applicable objectivity requirements.</p> | Thank you for your comment. This figure has been removed. |

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| P | Meyer | 23 | | | <p>Knappenberger, New Hope Environmental Services</p> <p>Figure This chart is meaningless. One isolated spot in the whole world had an abnormally hot summer for one year. So what? What possible conclusion can one draw from this? Some year has to be the highest. After all, on average, a city should be hitting a new 100-year high every three months.</p> <p>Here is a chart with far more meaning. It is a graph of what year each state of the US hit its monthly all-time high temperature for each of the 12 months (so, for 50 states and 12 monthly highs each there are 600 data points). (Note: figure inserted. Part of electronic file) If your hypothesis were correct, and man-made global warming were driving more heat waves and all-time highs, then a disproportionate number of high temperature records should have been set in the last 2 decades, but one can see this is not the case. Warren Meyer, Climate-Skeptic.com</p> <p>Further, recent high temperature records in urban locations are much more likely to be due to growing urban heat bias effects than man-made global warming. While this paper posits that man-made global warming may have added a half degree Celsius to global temperatures, urban biases can add 6-10C to urban temperature records. Meyer, Climate-Skeptic.com</p> | Thank you for your comment. The figure has been removed. |
| P | Michaels | 23 | | | <p>Figure This is highly misleading and does not place the 2003 heat wave in context. The accompanying figure shows the exceedingly small nature of the anomaly, and that it was embedded in a quite moderate summer worldwide (Note: Figure 2003 NCEP JJA Thickness Temp Anomaly inserted here. Part of electronic file) 1000-500mb thickness anomaly in standard deviations, JJA 2003. From Chase et al., Geophysical Research Letters, 2006.</p> <p>It is simply inappropriate to conflate this geographically small anomaly with global warming! Chase et al. note that there were no thickness anomalies above 3 standard deviations for calendar year 2003, while 5% of the planet experienced them in the very warm El Nino year of 1998.</p> | Thank you for your comment. The figure has been removed. |

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| | | | | | <p>Recommendation: I suggest you remove the illustration, because it will certainly draw a lot of negative attention to the CCSP if it stays in. As it now stands, the statement fails to meet the authors' claim of representing the "the best available science" (p. 14) and of conveying "the most relevant and up-to-date information possible" and otherwise violates applicable objectivity requirements.</p> <p>Michaels, Cato Institute and University of Virginia</p> | |
| P | National Wildlife Federation | 23 | | | <p>Graph</p> <p>This graphic is somewhat cryptic for the general audience. It is difficult to identify the trend toward more frequent and intense heat waves.</p> <p>National Wildlife Federation</p> | Thank you for your comment. The figure has been removed. |
| P | Herman | 23 | 1 | | <p>This implies an increase in Hurricane intensity and strength since the 1970's. The link below has links to comments by Prof Kerry Emanuel in disagreement with these comments. Others have also disagreed with these comments, yet no mention at all is made of this.</p> <p>http://www.chron.com/disp/story.mpl/tech/news/5693436.html</p> <p>Herman, University of Arizona</p> | Thank you for your comment. The portion of the text has been updated and further referenced. |
| P | Meyer | 23 | 1 | 1 | <p>I know of no scientifically meaningful definition of "heat wave." Without such a definition, measurement is impossible, and discussion of trends merely speculative.</p> <p>Meyer, Climate-Skeptic.com</p> | Thank you. We reference SAP 3.3 analysis which provides the reference that heat waves have become more frequent the last few decades relative to periods before. |
| P | Meyer | 23 | 1 | 4 | <p>Hurricane strength based on counts or landfalls is inherently faulty data because it is so subject to observer biases., particularly when the data go back to the early 20th century when hurricanes that never made landfall might never even be recorded. A better metric is accumulated cyclonic energy. By this metric, neither hurricanes nor cyclones appear to be getting more numerous or powerful.</p> <p>(Note: figure inserted. Part of electronic file)</p> <p>This is via the Australian National Climate Center, which also said:</p> <p>Concern about the enhanced greenhouse effect affecting TC frequency and intensity has grown over recent decades. Recently, trends in global TC activity for the period 1970 to 2004 have been examined by Webster et al. [2005]. They concluded that no global trend has yet emerged in the total number of tropical storms and hurricanes."... For the 1981/82 to 2005/06 TC seasons, there are no apparent trends in the total numbers and cyclone days of TCs, nor in numbers and cyclone days of severe TCs with minimum central pressure of 970 hPa or lower.</p> | Thank you. The text in question has undergone major revisions that we believe address the reviewer's concerns. The reviewer may re-examine the issue when the Second Draft is released for review. |

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| | | | | | Meyer, Climate-Skeptic.com | |
| P | Stouffer | 23 | 1 | | All the statements in this section are factually true. But they convey a wrong message. Tone and Balance issues. Heat waves over the US averaged together have not increased if one includes the 1930's. Tropical storm and hurricane intensity has not increased if one includes more of the historical record. Stouffer, GFDL/NOAA | Thank you. We reference SAP 3.3 analysis which provides the reference that heat waves have become more frequent the last few decades relative to periods before. |
| P | Zamarra | 23 | 1 | 4 | While I do not dispute this statement, does it make sense to mention anything about multi-decadal patterns that may also affect storm intensity? Also, we've only been monitoring tropical storms and hurricanes by satellite since the 1970s, so how can we really know for sure that these types of storms have or have not been increasing in intensity? I don't think definitive statements can be made with not even 40 years worth of satellite data. Zamarra, STG, Inc. | Thank you for your comment. Additional information on tropical storm and hurricane intensity has been added to the document. |
| P | Keillor | 23 | 2 | | Something more needs to be said about changing global circulation patterns and what features influence these patterns and contribute to climate changes. How do periodic features such as El Nino and La Nina, the Pacific Decadal Oscillation and quasi-stationary features such as the Aleutian Low and the Azores High influence circulation patterns of storms? What do the jet streams have to do with storm tracks? Much of society and many environments depend upon climate variability and suffer from droughts or floods when the variability is lost. How does global climate change affect persistence and variability of circulation patterns including storm tracks? Keillor, ASFPM | Thank you. The text in question has undergone major revisions that we believe address the reviewer's concerns. The reviewer may re-examine the issue when the Second Draft is released for review. |
| P | Knappenberger | 23 | 2 | 2 | This statement implies that climate models are not very accurately portraying the evolution of the earth's climate. Are the climate models wrong about the evolution of the tropics under and enhancing greenhouse effect or are the models under representing the magnitude of natural variations in the size of the tropical belt? In either case, the observations indicate that climate models are in error and inaccurate. Recommendation: Add a sentence to this paragraph explaining that the reasons that the observations differ from model projections are uncertain and could mean that natural variability and/or the climate evolution of the tropics is poorly handled by climate models. Without such a correction, the statement fails to meet the authors' claim of conveying the "the most relevant" information possible (p. 14) and otherwise violates applicable objectivity requirements. | Thank you. The text in question has undergone major revisions that we believe address the reviewer's concerns. The reviewer may re-examine the issue when the Second Draft is released for review. |

Unified Synthesis Product: Global Climate Change Impacts in the United States (1st Draft)

PUBLIC COMMENTS

July/August 2008 Reviewer Comments and Responses (Final Revision, 1/12/09)

Comment Type: BR – Blue Ribbon Panel, CC – Climate Communicators, G – U.S. Government, P – Public

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| | | | | | Knappenberger, New Hope Environmental Services | |
| P | Kruk | 23 | 2 | 4 | last sentence beginning with “Some of these shifts...”, comment: this final sentence needs a reference. Kruk, NCDC | Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re |
| P | Meyer | 23 | 2 | 3 | The fact that change is occurring faster than modeled or predicted is meaningless as a measure of a physical phenomenon. This is only a measure of the quality of past forecasting, not of the physical process. If a physical process is accelerating or going beyond historical norms, then that evidence should be used instead. Meyer, Climate-Skeptic.com | Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re |
| P | Stouffer | 23 | 3 | 2 | Both of these ice sheets are ...losing mass ... at increasing rates. – The record is very short. The observations may be variability. Stouffer, GFDL/NOAA | Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re |
| P | Stouffer | 23 | 3 | 4 | Last sentence: The statement made is not my understanding of the situation. Is it correct? Stouffer, GFDL/NOAA | Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re |
| P | Herman | 24 | | | The decline in Arctic sea ice is discussed and this certainly has occurred. But the recent rapid decline during the summer of 2007 is attributed only to melting in the report, but numerous studies have concluded that changes in oceanic circulation in the Arctic ocean have been at least partially responsible for this ice loss. In fact, it should have been obvious that such a sudden and large loss of permanent ice so close to the pole could not have been entirely a result of melting. Herman, University of Arizona | Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re |
| P | Tateman | 24 | | | Sea level rise "NOT" There is satellite data showing a slight lowering of Sea Level over the last few years, as well as anecdotal evidence from various locales. Not supported, Grade "D-" Tateman, Public Citizen | Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re |
| P | Clarke | 24 | 1 | | I am a little surprised by the statement "After about 2000 years of little change". Given issues like crustal rebound, it is likely difficult to determine small variations in sea level over the past 2000 years but I would expect that sea level has responded to variations in ice volumes and in ocean temperatures. Is this statement supported in the literature? Clarke, DFO | Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re-examine the issue when the Second Draft is released for review. |
| P | MacMurray | 24 | 1 | 1 | Include a reference for the assertion “After about 2000 years of little change...” MacMurray, Public Citizen | Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re |

Unified Synthesis Product: Global Climate Change Impacts in the United States (1st Draft)

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| Type | Reviewer | Page | Para | Line | Specific Comments | Responses |
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| P | Michaels | 24 | 1 | 1 | See figure 11.7 in the IPCC TAR. It is obvious that see a level rise has been fairly constant since at least the mid 18th century. Recommendation: Please correct the statement. As it now stands, the statement fails to meet the authors' claim of representing the "the best available science" (p. 14) and otherwise violates applicable objectivity requirements. Michaels, Cato Institute and University of Virginia | Thank you. The text in question has undergone major revisions that we believe address the reviewer's concerns. The reviewer may re |
| P | MacMurray | 24 | 2 | 1 | Indicate the time scale over which "Glaciers have been retreating worldwide, ..." E.g. is it during the past 25 years, 100 years, 1000 years? MacMurray, Public Citizen | Thank you. The text in question has undergone major revisions that we believe address the reviewer's concerns. The reviewer may re |
| P | Clarke | 24 | 3 | | Why is the South Pole upper cap while the north pole is not? Clarke, DFO | Thank you. The text in question has undergone major revisions that we believe address the reviewer's concerns. The reviewer may re |
| P | Freitag | 24 | 3 | 3 | While the West Antarctic Ice Sheet indicates ice loss, the Antarctic as a whole is not (NSIDC). Omission of this fact appears to indicate publication bias. Recommend adding comment regarding this and acknowledging the unknown reasons for such behavior There are other published reasons for WAIC melting, such as volcanic activity (British Antarctic Survey (2008, January 22). First Evidence Of Under-ice Volcanic Eruption In Antarctica, or (The Earth Institute at Columbia University (2007, February 26). Lakes Beneath Antarctic Ice Sheets Found To Initiate And Sustain Flow Of Ice To Ocean. Recommend adding these references. (NOTE: Graphs included in his comment. Attached at end of collation for your consideration.) Freitag, Public Citizen | Thank you. The text in question has undergone major revisions that we believe address the reviewer's concerns. The reviewer may re |
| P | MacMurray | 24 | 3 | | Add a sentence to the end describing the net Antarctic ice balance over the last decade; the current paragraph describes only the West Antarctic Ice Sheet balance. MacMurray, Public Citizen | Thank you. The text in question has undergone major revisions that we believe address the reviewer's concerns. The reviewer may re |
| P | Meyer | 24 | 3 | 5 | The theory that surface melt water is lubricating and accelerating Greenland ice movement is outdated and has mostly been repudiated (Joughin and Das, 2008). Meyer, Climate-Skeptic.com | Thank you. The text in question has undergone major revisions that we believe address the reviewer's concerns. The reviewer may re |
| P | Meyer | 24 | 3 | | Last line in paragraph This report demonstrates itself to be incredibly ones-sided. While ice has clearly melted in the Arctic, there are many indicators of ice mass increases in the Antarctic. Antarctic Sea ice extent reached a 30-year high in 2007, and most of Antarctica has been gaining ice mass over the last decades, offset somewhat by | Thank you. The text in question has undergone major revisions that we believe address the reviewer's concerns. The reviewer may re |

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| | | | | | | <p>rising temperatures and loss of ice around the Antarctic Peninsula.</p> <p>(chart via the University of Illinois Polar Research Group) (Note: figure inserted. Part of electronic file) Discussing only a few isolated studies of ice loss without taking in the broader context which tends to point to overall ice gains in Antarctica is disingenuous and shows this report to be lopsided and biased. Even the IPCC admitted that climate models predicted ice gains in Antarctica even in strong warming scenarios due to heavier precipitation . Meyer, Climate-Skeptic.com</p> | |
| | P | Michaels | 24 | 3 | | <p>Here is yet another example of rhetorical coloration. It begins by stating that melting of Greenland’s ice would raise sea level by 20 feet, and then says that it is “losing ice mass at increasing rates”. That’s because Greenland was either gaining ice or was neutral through roughly 2000. Below is the southern Greenland temperature history from the Danish Meteorological Institute. It is very clear that temperatures in the last decade are hardly unusual. If Greenland is shedding ice at these temperatures, it had to have lost much more ice for the period from roughly from 1925 through 1960. CCSP provides no such perspective, and it needs to add the temperature history so readers can see the actual data.</p> <p>(Note: Figure inserted – Southern Greenland Coastal Temperatures-Summer. Part of electronic file) Summer temperature history from southern Greenland. Source: Danish Meteorological Institute.</p> <p>Further, Greenland can take much more integrated warming and retain ice. While CCSP says that it is experiencing “record amounts of surface melting in recent years”, CCSP denies known climatic history.</p> <p>The most comprehensive analysis of Eurasian temperature histories back to the end of the last ice age was published in 2000 by Glen MacDonald et al. in Quaternary Research. MacDonald et al. collated records of trees preserved the acidic environment that is now the Arctic tundra. The remains were dated by radiocarbon analysis.</p> <p>The boundary between the northern forest and the bare tundra is currently south of</p> | <p>Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re-examine the issue when the Second Draft is released for review.</p> |


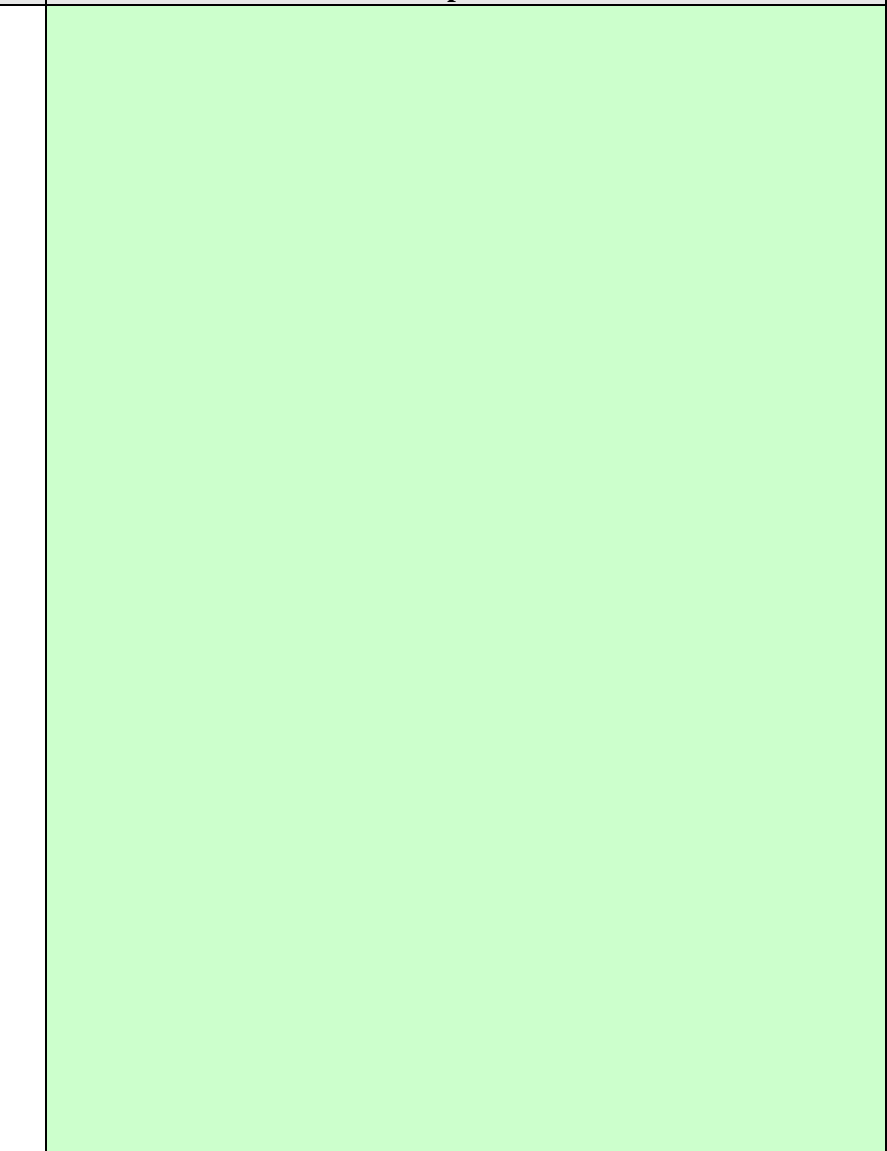
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| | | | | | | <p>the Arctic Ocean, and is determined by summer maximum temperatures. MacDonald found that “Over most of Russia, forest advanced to or near the current arctic coastline between 9000 and 7000 yr B.P. [before present] and retreated to its present position by between 4000 and 3000 yr B.P.” In other words, the Eurasian arctic was considerably warmer than today for seven millennia!</p> <p>How warm? “During the period of maximum forest extension, the mean July temperature along the northern coastline may have been 2.5 to 7°C [4.5-12.6°F] warmer than “modern”.</p> <p>One reason he gives for this warmth is “extreme Arctic penetration of warm North Atlantic Waters”. The only entrance for this water is via the passage between Greenland and Europe. In other words, the east coast of Greenland was likely to have been warmer for several millennia and it did NOT shed its ice. Why is there no reference to this work in CCSP with regard to Greenland and sea-level rise?</p> <p>In a 2006 comprehensive review of regional temperature histories, Jason Briner from the University of Buffalo wrote in Quaternary Research, “...summer temperatures from Qipisargo Lake on southern Greenland were 2 to 4°C [3.6-7.2°F] warmer in the early Holocene [post-ice age era beginning around 11,500 years ago] versus the late Holocene [more recent era]...Greenland ice sheet borehole paleothermometry indicates a temperature change of ~3.5°C [6.3°F] between the middle and late Holocene [roughly 4,000-7,000 years ago]”</p> <p>Finally, Luthcke et al, in Science in 2006 estimate the current rate of ice loss from Greenland at 25 cubic miles per year. Given that the total volume is approximately 670,000 cubic miles, the loss rate is 0.4% per century. In their 2007 review in Science, Shepard and Wingham confirm this figure.</p> <p>These observations—of warmer temperatures in Greenland, and of very modest ice loss, are totally relevant to potential sea-level rise in the U.S. and are totally ignored by CCSP. Why?</p> <p>Recommendation: These findings must be incorporated into the text. Modify Key</p> | |

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| | | | | | <p>Finding 2b to reflect Greenland’s history. As it now stands, the statement fails to meet the authors’ claim of representing the “the best available science” (p. 14) and of conveying “the most relevant and up-to-date information possible” and otherwise violates applicable objectivity requirements.</p> <p>Michaels, Cato Institute and University of Virginia</p> | |
| P | Center for Biological Diversity | 25 | | | <p>Box-Bottom of page</p> <p>This section should more strongly highlight the rapid climate change and dramatic loss of sea ice that is occurring in the Arctic. Specifically, this section should note that Arctic sea ice loss is occurring much faster than the most advanced climate models (the 2007 IPCC multi-model ensemble) have predicted and that leading climate scientists predict that the Arctic will be ice-free in the summer by 2030 or as early as 2012. According to Stroeve et al. (2007), the 2007 summer sea-ice minimum was lower than the sea-ice extent most climate models predict would not be reached until 2050, while 2006 winter sea-ice extent reached a minimum that most climate models forecast would not be reached until 2070. Given the conservative climate model results and the record minimum sea-ice extent of 2007, Stroeve et al. (2008) proposed that a seasonally ice-free Arctic Ocean might occur as early as 2030. Other leading climate scientists believe that current climate models markedly underestimate important melting processes and that the Arctic Ocean could be mostly ice free by the late summer of 2012 (Amos 2007, Borenstein 2007). The citations noted above are as follows:</p> <p>Stroeve, J., M. M. Holland, W. Meier, T. Scambos, and M. Serreze. 2007. Arctic sea ice decline: Faster than forecast. <i>Geophysical Research Letters</i> 34, L09501, doi:10.1029/2007GL029703.</p> <p>Stroeve, J., M. Serreze, S. Drobot, S. Gearheard, M. M. Holland, J. Maslanik, W. Meier, and T. Scambos. 2008. Arctic sea ice extent plummets in 2007. <i>EOS Transactions</i> 89:13-14.</p> <p>Amos, J. 2007. Arctic summers ice-free 'by 2013'. in BBC News, Available at http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/7139797.stm; Published December 12, 2007.</p> <p>Borenstein, S. 2007. Arctic Sea Ice Gone in Summer Within Five Years? in National Geographic newsletter, Available at http://news.nationalgeographic.com/news/pf/33860636.html; Published December 12, 2007.)</p> <p>Center for Biological Diversity</p> | <p>Thank you. The language associated with this figure has been revised.</p> |
| P | Clarke | 25 | | | <p>Box: Title - What is the justification for stating that the "Arctic sea ice decline is accelerating"? With the exception of 2007, Arctic sea ice extent is fully consistent with a linear trend over the period of satellite observations. A single year does not justify a claim of an accelerating decline.</p> | <p>Thank you. The language associated with this figure has been revised.</p> |

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| | | | | | Clarke, DFO | |
| P | Meyer | 25 | | | Figure-Upper Right This is terrible chartsmanship. The reader has no idea if this decrease is a lot or a little, without any context as to the base value. Converting the Y-axis scale to percent decrease from absolute numbers would help. Meyer, Climate-Skeptic.com | Thank you. This figure has been revised. |
| P | Meyer | 25 | | | Figure-Upper Right Most of the world’s glaciers were observed to have begun retreating in the 19th century, before any possible anthropogenic warming. Below is an example from Alaska Geographic magazine for Glacier Bay, Alaska (Note: figure inserted. Part of electronic file) The year lines correspond to the observed extent of the glacier observed in that year. As one can see, the recession began on or before 1794 and was mostly complete by 1907. Meyer, Climate-Skeptic.com | Thank you. The suggestion has been considered, but the author team has decided to retain this as is. |
| P | Michaels | 25 | | | Suggest you substitute BOTH the NH and SH monthly sea-ice anomaly plots from Cryosphere Today, which gives a much clearer picture. Using the latest data will reveal that the 2008 anomaly in the Arctic is pretty much back on the established trend line. (Note: Figure inserted here. Southern Hemisphere Sea Ice Anomaly. Part of electronic file) Southern hemisphere sea-ice anomalies, from Cryosphere Today. These figures prove that the CCSP explanation for the expansion is simply wrong. The Southern Hemisphere anomalies clearly demonstrate that the explanation that the rise in SH ice anomaly is caused by ozone depletion is simply wrong. Yes, we have a model—Shindell’s—but, no, it is clearly incorrect. Why? Block out all of the data after 1995. There is clearly no rise in ice anomaly prior to then. Yet ozone depletion was substantial and slightly increasing. There has been a very slight decrease in that depletion in recent years. But, for all intents, the depletion has been fairly constant throughout the satellite record. So why is there no rise in ice until 1995? Please—I expect the CCSP would at least have the temerity to test its assertions against reality. Picking a model (Shindell’s) when the data are readily available that invalidate that model is a scientific outrage. | Thank you. The suggestion has been considered, but the author team has decided to retain this as is. |


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| | | | | | Recommendation: Change the text and drop the ozone reference. As it now stands, the statement fails to meet the authors' claim of representing the "the best available science" (p. 14) and of conveying "the most relevant and up-to-date information possible" and otherwise violates applicable objectivity requirements. Michaels, Cato Institute and University of Virginia | |
| P | National Wildlife Federation | 25 | | | Graph-Greenland Ice Sheet It would be best to have all three graphics the same size. Having the 2005 image larger than the 1992 and 2002 images doesn't allow for an easy (or consistent) comparison. National Wildlife Federation | Thank you. This figure has been removed. |
| P | Singer | 25 | | | The USP mentions that "Arctic sea ice and the large ice-sheets on Greenland and parts of Antarctica are melting faster than expected." [p.25] Conclusion: "Faster than expected" simply means that the models used previously were inadequate and thus supports the suspicion that present models are similarly inadequate. In any case, even if the observations are correct, they are largely irrelevant to the main issue since any kind of warming whether natural or anthropogenic will melt ice. ***This fact should be clearly stated in the USP.*** Singer, Science & Environmental Policy Project | Thank you. This sentence has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Tateman | 25 | | | Ice melt "NOT" Some small areas of retraction but generally no net change, some rather erroneous Greenland suppositions included, actually more ice on top. Grade "D" Pages here reiterate previous baloney, not much worth refuting in any of this. Tateman, Public Citizen | Thank you. This sentence has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Zamarra | 25 | 1 | 2 | Need to specify that this is in the Northern Hemisphere; and the same is opposite in the Southern Hemisphere. Zamarra, STG, Inc. | Thank you. The comment has been considered, but is judged to contain no suggestion relevant to improvement of the scientific content of the USP report. |
| P | Herman | 25 | 2 | | An increase in westerly winds around Antarctica may very well have reduced the amount of warm, southerly flow into the water surrounding the continent, This is a reason given in the report for the record sea ice cover around Antarctica in 2007. However, is it not true that the same increase of westerly flow around the continent must also reduce the southward flow of cold air off of the continent, | Thank you. The text in question has undergone major revisions that we believe address the reviewer's concerns. The reviewer may re-examine the issue when the Second Draft is released for review. |


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| | | | | | preventing freezing. This obviously did not occur. Therefore I think the explanation for the record sea ice is invalid. Herman, University of Arizona | |
| P | MacMurray | 25 | 2 | 3 | References should be included for the assertions that “...the cooling influence of stratospheric ozone depletion is likely to be masking the effect of global warming.” and for “... the way stratospheric ozone depletion has affected atmospheric circulation: ...”. MacMurray, Public Citizen | Thank you. This sentence has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Zamarra | 25 | 2 | | Somewhere within this paragraph it might be helpful to mention that the Arctic is a frozen icecap, while the Antarctic is a continent with a frozen ice cap on top. Zamarra, STG, Inc. | Thank you. This paragraph has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | MacMurray | 26 | | | Figure Caption-Top Right figure caption, first sentence and last sentence: “...global average temperatures would have ...” should be changed to “...global average temperatures likely would have ...”; similarly, “...over the past century would actually have first...” should be changed to “...over the past century likely would actually have first...”; as with the following comment, these changes more accurately reflect the non-deterministic nature of model runs. MacMurray, Public Citizen | Thank you. This sentence/paragraph/section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | MacMurray | 26 | | | Figure-Top Right Caption A reference to the source of the model run data should be included in the caption. MacMurray, Public Citizen | Thank you. This figure has been replaced. |
| P | Meyer | 26 | | | The report should observe that when climate models were first run against history, they were a terrible match. Only years of tweaking and adding plug figures and twiddling with variables and assumptions have allowed climate scientists to have their models match history. In short, the fact models match history is not a sign the models are robust, it is a sign the models have been tweaked to do so. Meyer, Climate-Skeptic.com | Thank you. We agree the issue is important; however, we chose to highlight and discuss it elsewhere in the report. |
| P | Meyer | 26 | | | Figure: Upper right It should be made clear that the blue line is, like the red line, a simulation from climate models and not an actual empirical measurement. Meyer, Climate-Skeptic.com | Thank you. This figure has been replaced. |
| P | Meyer | 26 | | | Figure: Upper right My comments focus on the two lines that use climate models to “backcast” history. I don’t have the data to do any statistical tests, but just by eye, the red model | Thank you. This figure has been replaced. |

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|  | | | | | | <p>output line does an amazing job at predicting history. I have done a lot of modeling and forecasting in my life. However, I have never, ever backcast any model and gotten results this good. I mean it is absolutely amazing. Odd as it may seem, the precision with which the backcasts match history casts substantial doubt on the backcasting process.</p> <p>One's confidence in the climate models based on their near-perfect back-casting should be tempered by the fact that when the models first were run backwards, they were terrible at predicting history. Only a sustained effort to tweak and adjust and plug them has resulted in this tight fit.</p> <p>In fact, it is fairly easy to demonstrate that the models are far better at predicting history than they are at predicting the future. Climate models have done a terrible job in predicting the first 10-20 years of the future. One wonders why this report, which make such frequent use of climate models, never once addresses their accuracy and predictive ability. After all, we have climate model forecasts data all the way back from the late 1980's -- surely 20+ years is enough to get a test of their performance.</p> <p>Below is the model forecasts James Hansen, who this report cites authoritatively numerous times, used before Congress in 1988 (in yellow, orange, and red), with a comparison to the actual temperature record (in blue). (Note: figures inserted (Hansen 88). Part of electronic file) You can see the forecasts began diverging from reality even as early as 1985. By the way, we can't get too encouraged by the yellow line appearing to be fairly close -- the Hansen C case in yellow was similar to the IPCC B1 case which hypothesizes strong international CO2 abatement programs which have not come about. Based on actual CO2 production, the world is tracking, from a CO2 standpoint, between the orange and red lines. However, temperature is no where near the predicted values. I would suggest this report directly address the accuracy of past forecasts. Given this poor level of accuracy, the report should address what is different in current models that might give us confidence that they will be more accurate in the future. Meyer, Climate-Skeptic.com</p> |  |
| | P | Meyer | 26 | | | <p>Figure: Upper right This comment focuses on the blue line where climate models have back-cast world</p> | |

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| | | | | | | <p>temperature without man-made forcings. The blue line is supposed to represent the climate absent man. But here is the question I have been asking ever since I first started studying global warming, and no one has been able to answer: What changed in the Earth's climate in 1955? Because, as you can see, climate forecasters are telling us the world would have reversed a strong natural warming trend and started cooling substantially in 1955 if it had not been for anthropogenic effects.</p> <p>This has always been an issue with man-made global warming theory. Climate scientists admit the world warmed from 1800 through 1955, and that most of this warming was natural. But somehow, this natural force driving warming switched off, conveniently in the exact same year when anthropogenic effects supposedly took hold. A skeptical mind might ask why current warming is not just the same natural trend as warming up to 1955, particularly since no one can say with any confidence why the world warmed up to 1955 and why this warming switched off and reversed after that.</p> <p>Well, lets see if we can figure it out. The sun, despite constant efforts by alarmists to portray it is climactically meaningless, is a pretty powerful force. Did the sun change in 1955?</p> <p>Well, it does not look like the sun turned off. In fact, it appears that just the opposite was happening -- the sun hit a peak around 1955 and has remained at this elevated level throughout the current supposedly anthropogenic period.</p> <p>OK, well maybe it was the Pacific Decadal Oscillation? The PDO goes through warm and cold phases, and its shifts can have large effects on temperatures in the Northern Hemisphere.</p> <p>Hmm, doesn't seem to be the PDO. The PDO turned downwards 10 years before 1955. And besides, if the line turned down in 1955 due to the PDO, it should have turned back up in the 1980's as the PDO went to its warm phase again.</p> <p>So what is it that happened in 1955? The report owes us physical explanations and/or observation evidence that supports the notion that natural forcings drove temperature up in the first half of the 20th century and would have driven it down in the latter half absent man. But I can tell you what happened in 1955: Nothing.</p> <p>Let me digress for a minute, and explain an ugly modeling and forecasting concept called a "plug". It is not unusual that when one is building a model based on certain inputs (say, a financial model built from interest rates and housing starts or whatever) that the net result, while seemingly logical, does not get to what one thinks the model should be saying. While few will ever admit it, I have been inside the modeling sausage factory for enough years that it is common to add plug figures to force a model to reach an answer one thinks it should be reaching -- this is particularly common after back-casting a model.</p> | |

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| | | | | | | <p>I can't prove it, any more than this report can prove the statement that man is responsible for most of the world's warming in the last 50 years. But it is nearly certain that the blue line in the backcasting chart is a plug. As I mentioned earlier, modelers had terrible success at first matching history with their forecasting models. In particular, because their models showed such high sensitivity of temperature to CO2 (this sensitivity has to be high to get catastrophic forecasts) they greatly over-predicted history.</p> <p>Here is an example. The graph below shows the relationship between CO2 and temperature for a number of sensitivity levels (the shape of the curve was based on the IPCC formula and the process for creating this graph was described here).</p> <p>(Note: figure inserted. Part of electronic file)</p> <p>The purple lines represent the IPCC forecasts from the fourth assessment, and when converted to Fahrenheit from Celsius approximately match the forecasts on page 28 of this report. The red and orange lines represent more drastic forecasts that have received serious consideration. This graph is itself a simple model, and we can actually backcast with it as well, looking at what these forecasts imply for temperature over the last 100-150 years, when CO2 has increased from 270 ppm to about 385 ppm.</p> <p>(Note: figure inserted. Part of electronic file)</p> <p>The forecasts all begin at zero at the pre-industrial number of 270ppm. The green dotted line is the approximate concentration of CO2 today. The green 0.3-0.6C arrows show the reasonable range of CO2-induced warming to date. As one can see, the IPCC forecasts, when cast backwards, grossly overstate past warming. For example, the IPCC high case predicts that we should have see over 2C warming due to CO2 since pre-industrial times, not 0.3 or even 0.6C</p> <p>Now, the modelers worked on this problem. One big tweak was to assign an improbably high cooling effect to sulfate aerosols. Since a lot of these aerosols were produced in the late 20th century, this reduced their backcasts closer to actuals. (I say improbably, because aerosols are short-lived and cover a very limited area of the globe. If they cover, say, only 10% of the globe, then their cooling effect must be 1C in their area of effect to have even a small 0.1C global average effect).</p> <p>Even after these tweaks, the backcasts were still coming out too high. So, to make the forecasts work, they asked themselves, what would global temperatures have to have done without CO2 to make our models work? The answer is that if the world naturally were to have cooled in the latter half of the 20th century, then that cooling could offset over-prediction of temperatures in the models and produce the historic result. So that is what they did. Instead of starting with natural forcings we understand, and then trying to explain the rest (one, but only one, bit of which would be CO2), modelers start with the assumption that CO2 is driving temperatures at high sensitivities, and natural forcings are whatever they need to be to make the backcasts match history.</p> <p>The report should explain how the blue natural forcings line was generated for the 20th century. It also should explain the physical phenomenon that drove the shape of this line, including the climate reversal the models hypothesize circa 1955.</p> <p>Meyer, Climate-Skeptic.com</p> | |

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|  | P | Michaels | 26 | | | <p>Figure: Bottom The temperature trends in the lower stratosphere depicted in the figure have little to do with an enhanced greenhouse effect (despite the implication).</p> <p>Recommendation: Remove the stratospheric temperature panel. Michaels, Cato Institute and University of Virginia</p> | <p>Thank you. This figure has been removed.</p> |
| | P | Singer | 26 | | | <p>Banner On page 26 USP states “the specific patterns of climate change show that it is primarily human-induced.” This claim is contradicted by the data and graphs in CCSP Report SAP-1.1.</p> <p>a. The final (fourth) paragraph on page 26 states that climate models incorporating GH gas increases show warming at the surface and in the troposphere but cooling in the stratosphere. This statement is misleading. As clearly shown by the IPCC [2007] and CCSP-SAP 1.1 [2006], GH models show a tropospheric warming that is up to 3 times greater than the surface warming [see figure 1.3F from SAP-1.1, p.25]. But the observational evidence, also displayed in SAP-1.1 [see figure 5.7E p.116], shows the opposite. Instead of increased warming, the data show a slight cooling in the tropical zone. This disagreement between models and observations is shown more clearly in the SAP-1.1, figure 5.4G p.111. A more detailed view of the disparity of the temperature trends is given in the research paper of Douglass et al [2007]. All these figures are reproduced in the NIPCC report [2008] as figures 6, 7, 8, 9 and 10.</p> <p>b. This disparity clearly implies that GH gases are not responsible of the observed warming of the past 30 years. The climate sensitivity is therefore quite small -- in agreement with Monckton and Spencer. In other words, AGW is insignificant. The cooling of the stratosphere has no bearing on the value of the climate sensitivity and is not in dispute.</p> <p>c. There has been no considered response to the NIPCC [2008] claim that AGW is negligible. Statements in blogs and elsewhere that there is some doubt about the quality of the balloon data are contradicted by the fact that the UAH satellite data agree with the balloon data of both NOAA group and Hadley Centre [Douglass et al 2007].</p> | <p>Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re-examine the issue when the Second Draft is released for review.</p> |

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|  | | | | | | <p>d. Another response has been that perhaps the uncertainties in the models and observations are so large that there is an overlap -- and therefore no disagreement. This suggestion is far-fetched and belied by an examination of the evidence. However, in the executive summary of SAP 1.1 (though not in the report itself), one finds an attempt to show the uncertainties in models and observations by plotting “range” instead of the usual “Gaussian distribution” [see figure 4G page 13 in SAP 1.1 and also figure 9B in NIPCC]. But the use of “range” is clearly inappropriate for statistic analysis [Douglass et al 2007], since it gives undue weight to “outliers.”</p> <p>Conclusion Far from giving support to the claim that GW is human caused, i.e., that AGW is the major cause of warming, the fingerprint method shows the opposite -- namely that the human component is negligibly small. ***The USP should state this conclusion clearly – unless the author-team can respond credibly to the several points raised above Singer, Science & Environmental Policy Project</p> | |
| | P | Singer | 26 | | | <p>Graphs and Figures Following the IPCC [2001 and 2007], the USP suggests in the top graph on page 26 that the complicated temperature history of the 20th century can be fully explained by models that use both human and natural forcing. We claim that this is an illusion and simply the result of using several adjustable parameters, chosen so that will produce agreement with the observed global average surface temperature.</p> <p>a. The graph on page 20 shows the estimated magnitude of the various human and natural forcings. While the forcing for long-lived GHG shows only a small uncertainty, in fact the uncertainty is a factor of 3 or larger and corresponds to uncertainty in Climate Sensitivity (CS) [defined as the temperature increase produced by a doubling of GHG forcing]. The IPCC gives values of CS between 1.5 and 4.5 degC. Some models can give lower and higher values, depending primarily on the choice of cloud parameters. In view of the large dispersion among model results, it would be interesting to know exactly which model the USP chose to fit the observations and why. It would be instructive also to redraw the top graph on page 26 to show the result if models with different values of CS were used.</p> | <p>Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re-examine the issue when the Second Draft is released for review.</p> |


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| | | | | | | <p>b. Most all models implicitly use a positive feedback from water vapor to achieve their high values of climate sensitivity. Recently, Monckton [2008] and Spencer [2008] have shown that the climate sensitivity is only a small fraction of that quoted by the IPCC, perhaps as low as 0.5 degC or even lower. If that is the case, then the GH effect on climate would be of little significance.</p> <p>c. As seen from graph on page 20, the forcing effects from aerosols are highly uncertain, by at least 200% for the cloud-reflective effect. Since the aerosol forcing is used in the construction of the top figure on page 26, it would be interesting to know which value of aerosol forcing was chosen and why.</p> <p>d. We note that under natural forcings the USP considers only total solar irradiance. But TSI is small compared to the likely effects of changes of solar activity that lead to substantial changes in cloudiness [Svensmark 2007, Kirkby 2008, and other references]. Yet the USP, following the IPCC, completely ignores this major climate forcing. The importance of changes in solar activity is persuasively demonstrated in the observed detailed correlation between C-14 and O-18 in stalagmites [Neff 2001; see also figure 14 in NIPCC]. C-14 is produced by cosmic rays and can be taken as a proxy for solar activity, which modulates the intensity of galactic cosmic rays reaching the earth. O-18 is commonly taken as a proxy for temperature.</p> <p>e. Related to this discussion is the implied USP claim that natural forcings are not only very small but are so well known that any remaining change in temperature can only be explained by human activities. It will be interesting to know how the author-team can explain the lack of warming since 1998, using the same parameters of climate sensitivity that led to the top graph on page 26.</p> <p>Conclusion The attempt to reproduce observations by models that use human and natural forcing is simply an exercise in curve fitting and therefore worthless. It certainly does not constitute a validation of the climate models. ***We recommend that the top graph on p26 and associated discussion be eliminated – unless the author-team can provide answers to the several questions posed above.***</p> <p>Singer, Science & Environmental Policy Project</p> | |

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| P | Williams | 26 | | | Graph-Top Right Delete . You have not made the case that you understand the natural influences sufficiently to make this graph. Williams, Public Citizen | Thank you. This figure has been replaced. |
| P | Haapala | 26 | 2 | | Paragraphs 2,3,4 “Attribution studies generally involve comparing observed changes...” Attribution studies are valuable, but fraught with error. Climate is a dynamic, non linear system – classic chaos. As such, the values of all variables must be known at a specific time. If the values are not precisely known, errors will spiral rather than cancel out. Long term attribution studies of a chaotic system, such as presented on the graph “Separating Human and Natural Influences on Climate” are of dubious value. The current global cooling, which was unpredicted by the models, makes it clear the models do not include the precise value of all the natural variables, indeed may not include many important natural variables. The accompanying graph “Separating Human and Natural Influences on Climate” indicates that there was little or no warming caused by natural forces during the 20th Century. This is highly unlikely given the significant changes in the intensity of the sun during that century as measured by sun spots. A rigorous discussion of the errors entailed in attribution studies must be presented or the attribution studies must be dropped. Further, a century long rigorous presentation of sunspot activity as compared with temperature must be presented. Without such corrections the USP fails to meet the authors’ claim of representing the “best available science” (p.14) and the “best available evidence” (p.15) as well as violates standards of objectivity. Haapala, NIPCC | Thank you. The author team feels that this comment is based on inaccurate information. |
| P | MacMurray | 26 | 3 | 2 | “... the result shows that climate would actually have first ...” should be changed to “... the result shows that climate likely would actually have first ...” to more accurately reflect the non-deterministic nature of model runs. MacMurray, Public Citizen | Thank you. This paragraph has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | MacMurray | 26 | 3 | | First and last sentence “... century that include all of the major influences ...” should be changed to “... century that include all of the known major influences ...”; similarly, “...been caused by natural factors alone.” should be changed to “...been caused by known natural factors alone.” These small changes clarify that the validity of the | Thank you. This paragraph has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |

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| | | | | | models and conclusions depends on our knowledge of the major influences. MacMurray, Public Citizen | |
| P | Herman | 26 | 4 | | bottom of page 26 and top of Page 27. This discussion argues that stratospheric cooling and tropospheric warming must be due to the addition of greenhouse gases into the atmosphere, in agreement with models. Yes, that is true but the question remains as to how much warming is due to the addition of CO2 into the atmosphere, as well as other questions such as feedbacks, etc that are not adequately handled by the models. When a greenhouse gas is introduced into the atmosphere it must result in warming. There are many other variables and feedbacks which come into play here. Many other warming mechanisms, such as solar variations coupled with Ozone depletion can produce similar results. As has been pointed out in comment #5 above, the models do not properly predict the distribution of warming with height. This has been ignored in the report, but it is a basic feature of the model predictions, and it appears to be wrong. Therefore, it is certainly not correct to say that, since the models predicted stratospheric cooling and tropospheric warming, the models have it right. Herman, University of Arizona | Thank you. This paragraph has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Meyer | 26 | 4 | | Second to last sentence This is incredibly disingenuous. The report authors must know that an even more important fingerprint of man-made global warming than the troposphere-stratosphere differences is the differences between troposphere and the surface. Every model shows, and theory requires, the troposphere warm more than the surface, particularly in the tropics. This is not occurring. A major fingerprint is missing. Why can't this report be balanced, and say that one fingerprint exists, while another does not? Meyer, Climate-Skeptic.com | Thank you. This paragraph has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Michaels | 26 | 4 | 1 | See our Specific Comment 29. Santer et al. (one of the members of the FACA synthesis team) has shown that the vast majority of lower stratospheric cooling is because of ozone depletion, with only a very small residual caused by carbon dioxide. That should be stated in the text, even if it makes the solar argument a bit muddier (because the ozone-related cooling would likely dominate any solar warming). Recommendation: Change the text to remove reference to observed lower stratospheric cooling being caused by and enhanced greenhouse effect. As it now stands, the statement fails to meet the authors' claim of representing the "the best | Thank you for your comment and submission. This paragraph has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |

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| | | | | | available science” (p. 14) and otherwise violates applicable objectivity requirements. Michaels, Cato Institute and University of Virginia | |
| P | Haapala | 27 | 1 | | “If most of the observed surface and tropospheric warming had been caused by an increase in solar output...” This discussion includes only a part of the solar hypothesis – solar irradiance – which is well known not to sufficiently explain recent warming. The USP ignores other major components of the solar hypothesis. One, changing solar magnetism and solar wind influence the intensity of cosmic rays hitting the earth’s atmosphere (well established). Two, there is a strong relationship between the products created by high energy cosmic rays hitting the atmosphere and temperature.vi Three, unlike atmospheric carbon dioxide and temperature, this relationship can go one way only. Temperature and atmospheric carbon dioxide can influence one another. But the earth’s temperature cannot influence cosmic rays or the sun. Four, the likely mechanism whereby cosmic rays, modulated by solar activity, change the climate is through low level cloudinessvii. The USP must present a rigorous discussion of the complete solar hypothesis. Without such a correction the USP fails to meet the authors’ claim of representing the “best available science” (p.14) and the “best available evidence” (p.15) as well as violates standards of objectivity. Haapala, NIPCC | Thank you. The author team feels that this issue is beyond the scope of/not relevant to this report. |
| P | MacMurray | 27 | 1 | | Last sentence “...changes in the Sun can explain the warming of recent decades.” should be changed to “...changes in solar output can explain the warming of recent decades.” to remain consistent with the wording in the previous sentence, which accounts for the possibility that currently unknown solar effects on climate other than irradiance might be shown in the future to have an effect. MacMurray, Public Citizen | Thank you. This paragraph has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Center for Biological Diversity | 27 | 2 | | (This paragraph states that “On the question of hurricanes, analyses have found a strong correlation between sea surface temperatures and hurricane power, with both showing increasing trends in the Atlantic in recent decades.” This statement has no citations, although I can trace the supporting scientific studies for this statement to other sections of the report that discuss hurricanes. It would be helpful for the reader if the sources were directly provided for this statement and for similar statements in this report where the sources are not directly given but can be inferred from other sections of the report or from SAPs on the same topic. | Thank you. This paragraph has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |

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| | | | | | <p>For example, the citations for this particular statement could include the following:</p> <p>Emanuel, K., 2005: Increasing destructiveness of tropical cyclones over the past 30 years. Nature 436(7051): 686-688.</p> <p>Hoyos, C.D., P.A. Agudelo, P.J. Webster, and J.A. Curry, 2006: Deconvolution of the factors contributing to the increase in global hurricane intensity. Science 312(577): 94-97.</p> <p>Mann, M.E. and K.A. Emanuel, 2006: Atlantic hurricane trends linked to climate change. EOS Transactions of the American Geophysical Union 87(24): 233, 244.</p> <p>Saunders, M.A. and A.S. Lee, 2008: Large contribution of sea surface warming to recent increase in Atlantic hurricane activity. Nature 451(7178): 557-560.</p> <p>Trenberth, K.E. and D.J. Shea, 2006: Atlantic hurricanes and natural variability in 2005. Geophysical Research Letters, 33, L12704.)</p> <p>Center for Biological Diversity</p> | |
| P | Meyer | 27 | 3 | | <p>If sea surface temperatures have increased, and such increases cause hurricanes, then why has total cyclonic energy been flat over the last decades? (Note: figure inserted. Part of electronic file) This is via the Australian National Climate Center, which also said:</p> <p>Concern about the enhanced greenhouse effect affecting TC frequency and intensity has grown over recent decades. Recently, trends in global TC activity for the period 1970 to 2004 have been examined by Webster et al. [2005]. They concluded that no global trend has yet emerged in the total number of tropical storms and hurricanes."... For the 1981/82 to 2005/06 TC seasons, there are no apparent trends in the total numbers and cyclone days of TCs, nor in numbers and cyclone days of severe TCs with minimum central pressure of 970 hPa or lower.</p> <p>Meyer, Climate-Skeptic.com</p> | <p>Thank you for your comment and submission. This paragraph has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text.</p> |
| P | Haapala | 27 | 4 | | <p>Fingerprints; Omission: CCSP 2006 presented figures demonstrating that the models produce results showing atmospheric warming is concentrated in the tropics and increases with altitude up to 10-12 km.viii CCSP 2006 claimed this was the distinct human fingerprint of the recent warming. Without explanation, this claim of distinct human fingerprint is dropped in the USP. If the USP is a correction of prior the CCSP report, an explanation is necessary. Without such a correction the USP fails to meet the authors' claim of representing the "best available science" (p.14) and the "best available evidence" (p.15) as well as violates standards of objectivity.</p> | <p>Thank you for your comment. This paragraph has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text.</p> |

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|  | P | Meyer | 28 | | | <p>Haapala, NIPCC</p> <p>Figure: Upper Right</p> <p>This report needs to make clear that these forecasts of rapid warming actually depend on more than just greenhouse gas theory. In fact, as the IPCC states, warming from CO2 alone would be moderate under nearly any scenario. What makes the forecasts potentially catastrophic is the theory that the Earth's climate is dominated by positive feedback, which multiplies the warming from CO2 by 3-5x or more according to these models</p> <p>In the charts below, I have used the most drastic CO2 forecast (A2) from the IPCC fourth assessment, and run the numbers for a peak concentration around 800ppm. I have used the IPCC's own formula for the effect of CO2 on temperatures without feedback (Temperature Increase = F(C2) - F(C1) where F(c)=Ln (1+1.2c+0.005c^2 +0.0000014c^3) and c is the concentration in ppm).</p> <p>The other formula we need is the feedback formula. Feedback multiplies the temperature increase from CO2 alone by a factor F, such that F=1/(1-f), where f is the percentage of the original forcing that shows up as first order feedback gain (or damping if negative).</p> <p>The graph below shows various cases of temperature increase vs. CO2 concentration, based on different assumptions about the physics of the climate system. All are indexed to equal zero at the pre-industrial CO2 concentration of about 280ppm.</p> <p>So, the blue line below is the temperature increase vs. CO2 concentration without feedback, using the IPCC formula mentioned above. The pink is the same formula but with 60% positive feedback (1/[1-.6] = a 2.5 multiplier), and is approximately equal to the IPCC mean for case A2. The purple line is with 75% positive feedback, and corresponds to the IPCC high-side temperature increase for case A2. The orange and red lines represent higher positive feedbacks, and correspond to the 10C 5% case and 20C 1% case in Weitzman's article. Some of this is simplified, but in all important respects it is by-the-book based on IPCC assumptions.</p> <p>(Note: figure inserted. Part of electronic file)</p> <p>OK, so what does this tell us? Well, we can do something interesting with this chart. We have actually moved part-way to the right on this chart, as CO2 today</p> | <p>Thank you for your comment. This figure (and associated text) has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text.</p> |

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| | | | | | | <p>is now at 385ppm, up from the pre-industrial 280ppm. As you can see, I have drawn this on the chart below. We have also seen some temperature increase from CO2, though no one really knows what the increase due to CO2 has been vs. the increase due to the sun or other factors. But the number really can't be much higher than 0.6C, which is about the total warming we have recorded in the last century, and may more likely be closer to 0.3C. I have drawn these two values on the chart below as well.</p> <p>(Note: figure inserted. Part of electronic file)</p> <p>Again, there is some uncertainty in a key number (e.g. the amount of historic warming due to CO2) but you can see that it really doesn't matter. For any conceivable range of past temperature increases due to the CO2 increase from 280-385 ppm, the numbers are no where near, not even within an order of magnitude, of what one would expect to have seen if the assumptions behind the other lines were correct. For example, if we were really heading to a 5.4C increase at 800ppm, we would have expected temperatures to have risen in the last 100 years by about 2.2C, which NO ONE thinks is even remotely the case. And if there is zero chance historic warming from man-made CO2 is anywhere near 2.2C, then there is zero chance future warming will hit 5.4C, much less 10C or 20C.</p> <p>In fact, experience to date seems to imply that warming has been under even the no feedback case. This should not surprise anyone in the physical sciences. A warming line on this chart below the no feedback line would imply negative feedback or damping in the climate system. And, in fact, most long term stable physical systems are dominated by such negative feedback and not by positive feedback. In fact, it is hard to find many natural processes except for perhaps nuclear fission that are driven by positive feedbacks as high as one must assume to get the 10 and 20C warming cases. In short, these cases are absurd, and we should be looking closely at whether even the IPCC mean case is overstated as well.</p> <p>Given the last section of this paper on rapid climate change, I would assume the report argues that these curves are not continuous, that there is some point out there where the feedback fraction goes above 100%, and thus the gain goes infinite, and the temperature runs away suddenly. The best example is fissionable material being relatively inert until it reaches critical mass, when a runaway nuclear fission reaction occurs.</p> <p>This is a totally unreasonable assumption. The earth, on any number of occasions, has been hotter and/or had higher CO2 concentrations, and there is no evidence of this tipping point effect ever having occurred. In fact, this report contradicts itself by arguing on page 19 that temperatures absent mankind have been incredibly stable for thousands of years, despite numerous forcings like volcanoes and the Maunder Minimum. Systems this stable cannot reasonably be dominated by high positive feedbacks, much less tipping points and runaway processes.</p> <p>I have simplified away lag effects and masking effects, like aerosol cooling. Lag effects of 10-15 years barely change this analysis at all. And aerosol cooling, given its limited area of effect (cooling</p> | |

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| | | | | | aerosols are short-lived and so are geographically limited in area downwind of industrial areas) is unlikely to be masking more than a tenth or two of warming, if any. Meyer, Climate-Skeptic.com | |
| P | Meyer | 28 | | | Figure: Bottom Right The chart caption does not match the chart. The chart states that values from 1900-2000 are computer simulations. In the caption, these are called “observed” values. It is disingenuous to call a computer simulated reconstruction an “observation.” Meyer, Climate-Skeptic.com | Thank you for your comment. This figure (and associated text) has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Michaels | 28 | | | Figure-Bottom The caption and the graphic are very unclear and need expansion. The y-axis says “percentage change”, the caption says “projected changes in the heaviest 5 percent of precipitation events”. Does this mean that under the A2 scenario that the frequency of the 5% events will become 10%? Further, CCSP needs to tell how important these numbers are(n’t). The 96-99% (on an annual basis) precipitation events are largely no big deal. Consider a year with 100 precipitation days. The average amount on the highest day is in fact realization of the 1-year “flooding” event. Obviously it is the 50-100 year events (which should show some increases in some places, given (for example) the secular increase in continental US rainfall) that are of much more interest. Recommendation: I suggest a much different figure here, detailing a change in, say, 100-year flood frequencies, because picking on the top 5% arguably is picking upon many rain events that are much more beneficial than detrimental. Michaels, Cato Institute and University of Virginia | Thank you for your comment. This figure (and associated text) has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Haapala | 28 | 1 | | Omission “All climate models project that human-caused emissions of heat-trapping gases will cause further warming in the future, with global average temperature projected to rise by 3 to 11.5°F by the end of the century.” It is generally established that laboratory experiments and theoretical calculations indicate that a doubling of carbon dioxide will result in a temperature rise less than two degrees F. A justification why model projections exceed the values suggested by laboratory experiments and theoretical calculations must be rigorously discussed. Yet the laboratory and theoretical values are not even mentioned in the USP. Without such a correction the USP fails to meet the authors’ claim of representing the “best available science” (p.14) and the “best available evidence” | Thank you for your comment. This text (and associated figure) has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |

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| | | | | | (p.15) as well as violates standards of objectivity. Haapala, NIPCC | |
| P | Haapala | 28 | 1 | | Unreliable Models: “All climate models project that human-caused emissions of heat-trapping gases will cause further warming in the future, with global average temperature projected to rise by 3 to 11.5°F by the end of the century.” The graph on page 26 “Global Temperature Changes...” clearly shows that warming peaked in 1998 and there is now a cooling of the lower troposphere and the surface. This stabilization of temperature followed by cooling was not predicted by the models. Thus, the models are unreliable. All projections from the models, to include graphs, national and regional analyses, conclusions, and findings based on these projections must be dropped. Alternatively, every projection, graph, analysis, conclusion and finding derived from the models must include the statement that it is based on unreliable computer models. Without such a correction the USP fails to meet the authors’ claim of representing the “best available science” (p.14) and the “best available evidence” (p.15) as well as violates standards of objectivity. Haapala, NIPCC | Thank you. The author team feels that this issue is beyond the scope of/not relevant to this report. |
| P | Haapala | 28 | 1 | | Unreliable Models: “All climate models project that human-caused emissions of heat-trapping gases will cause further warming in the future, with global average temperature projected to rise by 3 to 11.5°F by the end of the century.” As stated above, CCSP 2006 presented graphs demonstrating the models produce results showing atmospheric warming is concentrated in the tropics and increases with altitude up to 10-12 km. (Which CCSP 2006 claimed to be the distinct human fingerprint.) As stated above, an analysis of radiosonde data by the Hadley Centre, as well as US sources, shows no such characteristic atmospheric warming above the tropics as predicted by the models. Thus the models are unreliable. All projections from the models, to include graphs, national and regional analyses, conclusions, and findings based on these projections must be dropped. Alternatively, every projection, graph, analysis, conclusion and finding derived from the models must include the statement that it is based on unreliable computer models. Without such a correction the USP fails to meet the authors’ claim of representing the “best available science” (p.14) and the “best available evidence” (p.15) as well as violates standards of objectivity. Haapala, NIPCC | Thank you. The author team feels that this issue is beyond the scope of/not relevant to this report. |
| P | Haapala | 28 | 1 | | Biased Models: “All climate models project that human-caused emissions of heat-trapping gases will cause further warming in the future, with global average | Thank you. The author team feels that this issue is beyond the scope of/not relevant to this report. |

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| | | | | | | <p>temperature projected to rise by 3 to 11.5°F by the end of the century.” Hindcasting (backcasting) techniques show that, with altitude, there is a statistically significant disparity between the warming trends derived from the models and those actually observed. At all altitudes above the surface the models show statistically significant greater warming trends than the observations. At altitudes from 12 to 16 km the models continue to show strong warming trends while observations show cooling trends.ix The models are biased and over estimate warming trends. All projections from the models, to include graphs, national and regional analyses, conclusions, and findings based on these projections must be dropped. Alternatively, every projection, graph, analysis, conclusion, and finding derived from models must contain the statement that it is based on biased computer models. Without such a correction the USP fails to meet the authors’ claim of representing the “best available science” (p.14) and the “best available evidence” (p.15) as well as violates standards of objectivity.</p> <p>Global Climate Change, Page 28; Rising global temperatures: Omission -- Climate Sensitivity: When comparing observations with the results from models, the models are unreliable in describing the characteristics of the recent warming and are biased in over estimating atmospheric warming. The critical issue is the sensitivity of the climate system to increasing carbon dioxide. The USP’s presentation of the sensitivity of the climate system to increasing carbon dioxide is not compelling. Observations, experimental results, and theoretical calculations indicate the climate is far less sensitive to increasing carbon dioxide than the USP presents.</p> <p>In last month’s testimony to the Senate Environment and Public Works Committee, Spencer cited his recent peer reviewed article in-press in the Journal of Climate that demonstrates that the models fail to account for natural, chaotic cloud variability generated internal to the climate system which always leads to the illusion the climate system is more sensitive than it really is.x Now the issue becomes what is the extent of the natural variability that must be netted out. The reviewers agreed the models needed to be re-examined but suggested the natural variability to be netted out was small.</p> <p>In his testimony, Spencer stated his group developed two methods for netting out the natural variability. He also stated that based “upon global oceanic climate variations measured by a variety of NASA and NOAA satellites during the period 2000 through 2005 we found a signature of climate sensitivity so low that it would reduce future global warming projections to below 1 deg. C by the year 2100.” Spencer’s findings that future warming from carbon dioxide will be less than 2 degrees F are far more in line with the results of laboratory experiments, theoretical calculations, and observations than the results of the models relied upon by the USP. The USP must rigorously discuss the climate sensitivity in light of this recent work rather than limit the discussion to the</p> | |

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| | | | | | <p>projections of models that are demonstrated to be biased. Without such a correction the USP fails to meet the authors' claim of representing the "best available science" (p.14) and the "best available evidence" (p.15) as well as violates standards of objectivity.</p> <p>Haapala, NIPCC</p> | |
| P | Michaels | 28 | 1 | | <p>CCSP states that 21st century warming will depend upon emissions and "how sensitive the climate will be". This needs a much greater explanation for the intended audience. Discriminate between emission ranges and sensitivity. I would add an additional illustration here to show different models under one scenario (the midrange scenario).</p> <p>(Note: Figure IPCC AR4 A1B Temperature Change inserted here. Part of electronic file)</p> <p>Warming projected by various models and the average (black line), IPCC midrange emission scenario.</p> <p>Now comes the hard part. CCSP has got to stop the BS (I chose my words carefully) about the models and observed temperatures and come clean. Something is very wrong.</p> <p>We are in our eleventh year without a net warming trend. Yes, I know this is in part because of the large 1998 El Niño. However, removing 1998 and the subsequent La Niña response (1999 and 2000), still yields no warming. One has to go back prior to the beginning of the second warming of the 20th century (pre-1975) to find such a string.</p> <p>Then there is the problem caused by Keenlyside et al. (Nature, 2008), which indicates there may be no additional warming until the middle or the latter part of the next decade. Now—please point out that NOT ONE of the models used in the midrange scenario in AR4 has a 15-20 year period with no net warming. Not one. The implications of course, are manifold. First, the models must, in general, be predicting too much warming. Holding temperatures constant for 1-2 decades obviously delays any oceanic water vapor feed back for even longer!</p> <p>Recommendation: The CCSP needs to state this somewhere, and page 28 looks like a pretty good place. Why not make a splash? We leave it up to some op-ed writing scientist when the public would be so much better served if CCSP itself brought up the problem?</p> | <p>Thank you. This statement has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text.</p> |

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| | | | | | This invalidates Key Finding #2, headline. Change or remove. Michaels, Cato Institute and University of Virginia | |
| P | National Wildlife Federation | 28 | 1 | 1 | It would probably be good to explain that the 3 to 11.5 degree rise is “above pre-industrial” levels. National Wildlife Federation | Thank you. This sentence has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Keillor | 28 | 2 | | On the subject of emissions, provide a companion graphic on emissions to the graphic on observed and projected global average temperature. Show with horizontal lines or bars the best estimates of heat-trapping gas concentrations in the atmosphere at which “dangerous human interference with the climate system” can be avoided. The proximity of present gas concentrations to those thresholds, and the rate of increasing concentrations provide necessary, compelling support for the opening statements of the Executive Summary on pages 4 and 5 that call for urgent action. Keillor, ASFPM | Thank you. We agree the issue is important; however, we chose to highlight and discuss it elsewhere in the report. |
| P | Singer | 29 | | | Sea level rise is the most feared consequence of a putative future warming. The USP report does not produce any independent analysis of global sea level rise but ventures the opinion that sea level will rise between 2 and 5 feet during the 21st century [page 29]. It says “various methods of estimating future sea level rise suggest increases of 2 to almost 5 feet by the end of this century but even larger numbers cannot be ruled out.” a. No references are given; no sources are quoted. The values cited are several times greater than those published by the IPCC-2007. We suspect that the 2 to 5 foot figure corresponds to the range of 50-140 cm given in a published paper by Rahmstorf [2007] and that the even larger figure may refer to Hansen’s value of 600 cm [see figure 10 in the NIPCC Report]. Recently, Rahmstorf [2007] has published a ‘top down’ approach to SL-rise prediction that exceeds the current IPCC estimates about threefold. He simply assumes the rate of rise is proportional to global mean temperature and ignores the negative effects on sea level rise from ice accumulation in Antarctic and Greenland. There is no theoretical basis to support his assumption – and indeed, it is contradicted by observational evidence: SL rise did not accelerate during 1920-1940 when the climate warmed rapidly and continued at the same rate even when the climate was cooling from 1940 to 1975 [Trupin and Wahr 1990; Holgate 2007; see also | Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |

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| | | | | | <p>figure 18 in NIPCC].</p> <p>Hansen [2006] has suggested even more extreme estimates of future SL rise – nearly 15 or even 60 times the mean IPCC value and 30 or even 120 times that of Singer [1997]. His 20-foot estimate is based on speculation about the short-term fate of polar ice sheets, assuming a sudden collapse and melting; his 80-foot estimate is derived by comparison with previous interglacials. However, the MWP and the much greater warmings during the earlier Holocene showed no evidence of such imagined catastrophes. Hansen and Rahmstorf can therefore be considered “contrarians” on this issue.</p> <p>Conclusion Coral and peat data show that sea level has been rising of between 7 and 9 inches per century during past millennia [Toscano and Macintyre 2003, see also figure 17 in NIPCC]. Since this rate of rise has been unaffected by short-term warming or cooling, we may safely assume that it will continue to do so in the future – at least until the next ice age, at which time sea levels will drop. ***USP should delete its speculative estimates of future sea-level rise.***</p> <p>Singer, Science & Environmental Policy Project</p> | |
| P | Zamarra | 29 | 4 | 1 | <p>Higher SSTs are not the only factor that leads to stronger storms, and this needs to be mentioned here. You could have the hottest water in the entire ocean but without the other necessary factors for cyclogenesis (easterly wave, light wind shear, etc.), the storm will not even form. Perhaps re-wording something like “Higher ocean temperatures contribute to stronger storms...”</p> <p>Zamarra, STG, Inc.</p> | Thank you. The suggestion has been considered, but the author team has decided to retain this as is. |
| P | Keillor | 29 | 5 | | <p>These paragraphs are extremely important, but the information is understated. There is presently no consensual upper bound for sea level rise in this century: a problem for planners and those with management responsibilities for many coastal lands. In an IPCC report, the authors stated: “Because understanding of some important effects driving sea level rise is too limited, this report does not assess the likelihood, nor provide a best estimate or an upper bound for sea level rise.” (Page 7 in Climate Change 2007: Synthesis Report, Summary for Policymakers. An Assessment of the Intergovernmental Panel on Climate Change).</p> <p>Keillor, ASFPM</p> | Thank you. These paragraphs have been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Michaels | 29 | 5 | | <p>First, see above comments on the stability of the Greenland ice cap when it was</p> | Thank you. This paragraph has been modified due to other review |

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| | | | | | <p>warmer for millennia. The statement about “additional processes are at work which affect the dynamic response” of ice sheets has to be couched in the findings of van de Wal in Science (2008) and showing very limited response, Howat et al. (Science, 2008), reporting a slowing of major outlet glaciers to previous values, and Joughin et al. (Science, 2008) showing minimal acceleration of outlet glaciers. It is quite clear that the balance of evidence argues against rapid ice loss from Greenland.</p> <p>Recommendation: These findings need to be mentioned and referenced. As it now stands, the statement fails to meet the authors’ claim of representing the “the best available science” (p. 14) and of conveying “the most relevant and up-to-date information possible” and otherwise violates applicable objectivity requirements. Michaels, Cato Institute and University of Virginia</p> | <p>comments and the issue addressed by this comment is no longer pertinent to the document text.</p> |
| P | URS | 29 | 5 | | <p>These paragraphs are extremely important, but the information is understated. There is presently no consensual upper bound for sea level rise in this century: a problem for planners and those with management responsibilities for many coastal lands. With all of the modeling that has been done to assess the impacts of sea level rise on the coasts around the country, there must be some results of the effect sea level rise in terms of upper bounds, otherwise there will be no ability to plan for the future. How will construction setbacks from the coast be determined? Information on the upper bounds of sea level rise needs to be stated as a critical driver of future planning efforts. As mentioned in earlier sections on adaptation, sea level rise is a moving target and must be addressed as such.</p> <p>URS</p> | <p>Thank you. These paragraphs have been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text.</p> |
| P | Center for Biological Diversity | 29 | 6 | | <p>(The last paragraph explaining the uncertainty in sea level rise projections is important and should include the following citations: Hansen, J., L. Nazarenko, R. Ruedy, M. Sato, J. Willis, A. Del Genio, D. Koch, A. Lacis, K. Lo, S. Menon, T. Novakov, J. Perlwitz, G. Russell, G. A. Schmidt, and N. Tausnev. 2005. Earth’s energy imbalance: confirmation and implications. Science 308:1431-1435. Hansen, J., M. Sato, R. Ruedy, P. Kharecha, A. Lacis, R. Miller, L. Nazarenko, K. Lo, G. A. Schmidt, G. Russell, I. Aleinov, S. Bauer, E. Baum, B. Cairns, V. Canuto, M. Chandler, Y. Cheng, A. Cohen, A. Del Genio, G. Faluvegi, E. Fleming, A. Friend, T. Hall, C. Jackman, J. Jonas, M. Kelley, N. Y. Kiang, D. Koch, G. Labow, J. Lerner, S. Menon, T. Novakov, V. Oinas, J. Perlwitz, J. Perlwitz, D. Rind, A. Romanou, R. Schmunk, D. Shindell, P. Stone, S. Sun, D. Streets, N. Tausnev, D. Thresher, N. Unger, M. Yao, and S. Zhang. 2007. Dangerous human-made interference with climate: a GISS modelE study. Atmospheric Chemistry and Physics 7:2287-2312. Overpeck, J. T., B. L. Otto-Bliesner, G. H. Miller, D. R. Muhs, R. B. Alley, and J. T. Kiehl. 2006. Paleoclimatic evidence for future ice-sheet instability and rapid sea-level rise. Science 311:1747-1750.</p> | <p>Thank you. We have added additional references.</p> |

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| | | | | | Rahmstorf, S., 2006: A semi-empirical approach to projecting future sea-level rise. Science 315: 368-370.) Center for Biological Diversity | |
| P | Michaels | 29 | 6 | | To give some sense of the nature of the range of sea-level rise projections, I think it would be fair for inclusion of a sentence about estimates from the IPCC mid-range emissions scenario, noting that the lower bound was raised from its previous (2001) estimate and the upper bound was lowered, from 28 to 19 inches. Michaels, Cato Institute and University of Virginia | Thank you. This paragraph has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Frumhoff | 30 | 3 | | Please add citations to this important discussion. "It has been suggested...." By whom? Frumhoff, Union of Concerned Scientists | Thank you. The text in question has undergone major revisions that we believe address the reviewer's concerns. The reviewer may re-examine the issue when the Second Draft is released for review. |
| P | Frumhoff | 30 | 4 | | "...avoiding exceeding the 3.5 F threshold." Change "threshold" to "level" or "target". Frumhoff, Union of Concerned Scientists | Thank you. The text in question has undergone major revisions that we believe address the reviewer's concerns. The reviewer may re-examine the issue when the Second Draft is released for review. |
| P | Goklany | 31 | | | The discussion of abrupt climate change on p. 31 reveals some of the major shortcomings of this report, namely, that it reports on studies but it doesn't always evaluate them. But this is supposed to be part of a scientific assessment and merely reporting on studies does not an assessment make. An assessment should not merely repeat findings from selected studies but also include a critical evaluation of those studies, and discussion of the probability that the events identified will occur over a specified period of time, its impacts, whether or not it may be possible to be able to cope with them. Alternatively, if insufficient information exists to estimate risks associated with a phenomenon, that should be noted. While on this topic, please (a) modify the last paragraph in light of Das et al. (2008), Joughin et al. (2008), and van de Wal et al. (2008) (see also Kerr 2008), and (b) please provide an assessment of these papers as well as the Rahmstorf (2007) paper, including its strengths, weaknesses, the likelihood of the scenario specified in the last sentence of this page, and the expected impacts of a sea level rise of the order of 3-5 meters per century assuming that it does or doesn't catch humanity by surprise. References | Thank you. This is a synthesis product, which draws from numerous assessments. |



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| | | | | | <p>Joughin I., et al. 2008. Seasonal Speedup Along the Western Flank of the Greenland Ice Sheet. Science 320, DOI: 10.1126/science.1153288]</p> <p>Das, S.B. et al. 2008. Fracture Propagation to the Base of the Greenland Ice Sheet During Supraglacial Lake Drainage. Science 320, DOI: 10.1126/science.1153360.</p> <p>Kerr,R.A. 2008. GLACIOLOGY: Greenland Ice Slipping Away but Not All That Quickly.Science 320, DOI: 10.1126/science.320.5874.301.</p> <p>van de Wal, R.S.W., et al. 2008. Large and Rapid Melt-Induced Velocity Changes in the Ablation Zone of the Greenland Ice Sheet. Science 321: 111 – 113.</p> <p>Goklany</p> | |
| P | Keillor | 31 | 1 | | <p>The section needs additional discussion and clarification of past and anticipated “abrupt” and “rapid” climate change. Put the subject in a context useful for those with responsibilities for planning adaptation strategies and measures.</p> <p>Keillor, ASFPM</p> | <p>Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text.</p> |
| P | URS | 31 | 1 | | <p>The section needs additional discussion and clarification of past and anticipated “abrupt” and “rapid” climate change. Put the subject in a context useful for those responsible for planning adaptation strategies and measures. Who is responsible for abrupt climate change—what are the measures to be taken? What measures should be taken for rapid climate change, and what would be the effects and impacts on emissions?</p> <p>URS</p> | |
| P | Keillor | 31 | 2 | | <p>The paragraph on rapid ice sheet collapse is vital, but incomplete. Mention the possible breakdown of the West Antarctic and/or Greenland ice sheets by 2100 under one of the IPCC scenarios (Page 41 in Parry, M.L., O.F. Canziani, J.P. Palutikof and Co-authors 2007; Technical Summary. Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. vander Linden and C.E. Hanson, Editors. Cambridge University Press, Cambridge, U.K.). A breakdown in either ice sheet will result in major sea level rise. The year 2100 is already within the planning horizon of many professionals.</p> <p>Keillor, ASFPM</p> | |
| P | Michaels | 31 | 2 | | <p>Last sentence: : this statement is from a single citation from Rhamstorf.</p> <p>Recommendation: Why not cite the much broader literature from which the IPCC estimates were made than a single reference? As it now stands, the statement violates applicable objectivity requirements.</p> <p>Michaels, Cato Institute and University of Virginia</p> | <p>Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re-examine the issue when the Second Draft is released for review.</p> |

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| P | Michaels | 32 | | | <p>Comment on temperature and precipitation maps for the U.S.</p> <p>Comment: According to CCSP, “The maps...are based on sixteen models’ projections of future temperature”. Later, there is NO mention of the model sourcing for the precipitation maps, but the reader is left to assume that it is from the “16” models noted on page 36. The CCSP needs to show that the temperature projections are fairly robust across models, by putting in a graphic with all 16 maps for 2050 or 2090, and then it must do the same for all the precipitation models.</p> <p>Let me argue to CCSP’s selfish interest. If you can’t do precipitation reliably, you can’t have the surface energy balance or the vertical distribution of moisture right, either. Which means that there is something likely to be fundamentally fishy with the temperature projections, too...so how come they can look so alike when the precipitation maps look so different? Pointing this out in the CCSP report only serves to demonstrate how much more research is needed, and that the science is hardly “settled”, except that everyone agrees that carbon dioxide results in a slightly warmer lower atmosphere, which has been “settled”, I think, for something like 130 years or so. So telling the sad truth might actually increase CCSP funding, no?</p> <p>Michaels, Cato Institute and University of Virginia</p> | <p>Thank you. This section, including figures, has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text.</p> |
| P | Tateman | 32 | 1 | | <p>Bullet 1 " U.S. temperatures are rising. • They are projected to rise much more in this century. • Just how much more depends primarily on the amount of heat trapping emissions."</p> <p>Temperatures are not rising, have not since 1998, look at your real un-adjusted numbers. Look at your satellite measurements, (best available source for accuracy), your statements are unsupported by your own data. Grade "F"</p> <p>Tateman, Public Citizen</p> | <p>Thank you. The author team feels that this comment is based on inaccurate information.</p> |
| P | Williams | 32 | 1 | | <p>Bullet 3 Delete. Not a proven fact. It is a projection of models that have not been validated and shown to be wrong. See not for pages 16 and 21 above.</p> <p>Williams, Public Citizen</p> | <p>Thank you. The author team feels that this comment is based on inaccurate information.</p> |
| P | Freitag | 32 | 3 | | <p>Bullet 1: It is not known if Atlantic hurricanes have increased in intensity. References here:</p> | <p>Thank you. The suggestion has been considered, but the author team has decided to retain this as is.</p> |

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| | | | | | <p>Normalized Hurricane Damage in the United States 1900-2005, Pielke et. al. DOI: 10.1061/(ASCE)1527-6988(2008)9:1(29)</p> <p>NOAA News Release dated 21Feb2008 states, “There is nothing in the U.S. hurricane damage record that indicates global warming has caused a significant increase in destruction along our coasts.”</p> <p>Recommendation, rephrase as, “Atlantic hurricanes may have increased in intensity.” Freitag, Public Citizen</p> | |
| P | Frumhoff | 32 | 5 | | <p>Bullet 2</p> <p>“Uptake of carbon by trees in the United States absorbs about one-third of our emissions.” Add “the equivalent of” in advance of “about one-third”.</p> <p>Frumhoff, Union of Concerned Scientists</p> | Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re-examine the issue when the Second Draft is released for review. |
| P | Angel | 33 | | | <p>Graphs-United States and Global –</p> <p>Graphs refer to "mean baseline" without mentioning what it is. I assume it is 1971-2000 and should be stated as such.</p> <p>Angel, Illinois State Water Survey</p> | Thank you. This section, including figures, has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Knappenberger | 33 | 1 | 1 | <p>That is a poor description of the temperature history of the U.S. during the past 50 years. In fact, based upon the Figure, the average temperature in the U.S. declined from 1958 to the late-1970s, and then has been warming since, being consistently warm since 1998. Thus the warming has been occurring for the past 30 years. It seems odd to include 20 years of cooling in with 30 years of warming to conclude that we have been warming for 50 years.</p> <p>Recommendation: Change “past 50 years” to “past 30 years.” Without such a correction, the statement fails to meet the authors’ claim of conveying the “best available science” (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | Thank you. This section, including figures, has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Knappenberger | 33 | 1 | 4 | <p>Below are the surface temperature trends from 1979 to 2005 (“recent decades”) taken from the IPCC AR4 page 250. Notice that large areas of the eastern Pacific Ocean, southern Atlantic Ocean, and southern Indian Ocean show no temperature change and many portions of the southern oceans around Antarctica show significant cooling trends. Clearly, the “warming in recent decades” has NOT been global.</p> | Thank you for your comments and submission. This section, including figures, has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |

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| | | | | | (Note: Figure – Surface temperature trends, 1979-2005. Significant trends are hatched (source: IPCC AR4, p. 250 inserted here. Part of electronic file) Recommendation: Remove this very non-scientific description of “global warming,” and replace the maps of specific years (i.e., weather) with the IPCC map of climate trends. Without such a correction, the statement fails to meet the authors’ claim of conveying the “best available science” (p. 14) and otherwise violates applicable objectivity requirements. Knappenberger, New Hope Environmental Services | |
| P | Angel | 34 | | | Graph-Observed Change in Annual Average temp Graph on left hand side has a label of 1970-2000. Is that correct? I assume it should be 1971-2000. Angel, Illinois State Water Survey | Thank you. This section, including figures, has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Center for Biological Diversity | 34 | | | Map Figures The maps are confusing and should more clearly label the low versus high emissions scenarios. Center for Biological Diversity | Thank you. This section, including figures, has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Sherwood | 34 | | | Projected Change in Annual Average Temperature Figures: The fact that the arrows don't point to the same parts of the respective panels made me unsure I was interpreting the graphics correctly. Also, the low emissions panel for 2020 seems to show slightly more warming than the high-emissions figure--were they switched, or did "low emissions" also imply low aerosol emissions whose short-term effects dominated those of GHG's? Sherwood, Yale University | Thank you. This section, including figures, has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Angel | 35 | | | Maps- The maps provide projections of future temperatures but it does not state that these are departures and from what base period. Angel, Illinois State Water Survey | Thank you. This section, including figures, has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Center for Biological Diversity | 35 | | | Figure-Bottom left The figure legend states that “high emissions scenario” refers to the SRES A2 in some instances and the A1Fi in others. It would be helpful to denote which scenario is being used in cases where the scenario is not currently specified in the report; for example, “in a high emissions scenario (A2)” or “in a low emissions scenario (B1).” Center for Biological Diversity | Thank you. This section, including figures, has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Clarke | 35 | | | Maps- Are these diagrams in the correct order. The 2020 warming for Alaska appears to be higher for the lower emission scenario than for the higher. | Thank you. This section, including figures, has been modified due to other review comments and the issue addressed by this comment |

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| | | | | | Clarke, DFO | is no longer pertinent to the document text. |
| P | Tateman | 35 | | | <p>Maps - "maps on this page are based on sixteen models' projections of future temperature using two scenarios of carbon dioxide emissions from the Intergovernmental Panel on Climate Change (IPCC), Special Report on Emission Scenarios (SRES)1. The "low" scenario here is IPCC SRES B1, while the "high" is A2. In other places in this report, the higher scenario A1FI (red line in graphic at left) is used as the" etc.</p> <p>Models that do not rationalize water vapor conduits are worthless! None of the IPCC models do, therefore inadmissible. Grade "F"</p> <p>Tateman, Public Citizen</p> | Thank you. This section, including figures, has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Goklany | 36 | | | <p>Are the trends statistically significant at the 95% level (see also Cohn and Lins 2005; reference furnished above)?</p> <p>Goklany</p> | Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Knappenberger | 36 | | | <p>There is no map of the observed U.S. precipitation trends.</p> <p>Recommendation: Include a map of observed trends in total annual precipitation across the U.S.</p> <p>Knappenberger, New Hope Environmental Services</p> | Thank you. This section, including figures, has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Singer | 36 | | | <p>a. The USP makes regional predictions about temperature and precipitation by using an average of some 15 climate models (as stated on page 36). However, we know that this procedure hides the strong disagreements among individual models and is therefore deceptive. We have for example the experience from the National Assessment report [2000] "Climate Change Impacts on the United States" [available at www.nacc.usgcrp.gov]. (The NACC report failed the test of the Data Quality Act and was finally considered to be not an official report of the US government.)</p> <p>It used two climate models of high sensitivity to calculate regional temperatures, soil moisture, and precipitation. The striking disagreement of soil moisture results is shown in a graph by Kerr [2000]. On precipitation, the models again disagree strongly. For the 18 regions of the United States nine regions show opposite results. For example, one model shows North Dakota turning into a swamp, the other shows it turning into a desert – as seen in figure 16 of NIPCC [2008].</p> | Thank you. This section, including figures, has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |


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|  | | | | | | <p>b. A separate issue is how the USP constructs its “average model.” We would like to know whether they simply averaged the 15 models (giving each model equal weight) or whether they averaged all of the individual model runs, i.e., an average of some 50 separate runs. There is no discussion about the procedure and no justification is given.</p> <p>c. USP states on page 23: “Currently rare extreme events become more common.” This statement is not supported by evidence. In addition, it is a matter of simple statistics that as the length of the observation period increases, so must the probability for the occurrence of extreme events -- even if there’s no change in the mean climate. The USP report does not seem to allow for this purely statistical effect.</p> <p>Conclusion If climate should warm in the 21st century, then overall global precipitation should increase because of increased evaporation from the ocean. However, current models seem to be incapable of determining the future pattern of precipitation. ***The USP should show the regional results from each of the 15 models separately – in order to exhibit the major disagreement among models – all of which is now hidden from the reader by using an “average” value. The author-team should also supply answers to the several questions raised above.***</p> <p>Singer, Science & Environmental Policy Project</p> |  |
| | P | Michaels | 36 | 1 | 3 | <p>Below are graphs of annual precipitation from NCDC for Arizona, California, Nevada, and New Mexico. I believe this is the U.S. Southwest. (Figures, as noted, are inserted here. Part of electronic file) “...the Northeast, ha(s) generally become wetter”.</p> <p>Comment: I’m not going to waste time here plotting things, but Maine precipitation has declined significantly, while New York and Pennsylvania have seen significant increases. However, the magnitude of the increase in the pre-war period is generally the same as in the postwar era. So what caused the large increase in the early 20th century that is the same magnitude as the later one? The obvious answer is something like “secular variation”, which makes it hard to distinguish causation for the latter increase.</p> | |

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| | | | | | <p>Recommendation: Change the text so that it reflects reality. Modify the text to say that some areas in the southwest have shown a decrease in precipitation, but, on the average, regional precipitation is unchanged since records began in 1895. As it now stands, the statement fails to meet the authors' claim of representing the "the best available science" (p. 14) and of conveying "the most relevant and up-to-date information possible" and otherwise violates applicable objectivity requirements.</p> <p>Michaels, Cato Institute and University of Virginia</p> | |
| P | Knappenberger | 36 | 2 | 2 | <p>Not so sure about these numbers. While we showed that precipitation on the wettest day of the year for stations across the U.S. (roughly the wettest few percents of rain events) was increasing, we also showed that it was not increasing faster than the total annual precipitation. (Michaels, et al., 2004, Trends in precipitation on the wettest days of the year across the contiguous USA, International Journal of Climatology, 24, 1873-1882.).</p> <p>(Note: Figures on Precipitation inserted here. Part of electronic file)</p> <p>Top: Trend in the average precipitation falling in the wettest day of the year (averaged across the U.S.). Bottom: Trend in the average annual percentage of precipitation falling on the wettest day of the year. (source: Michaels, et al., 2004, Trends in precipitation on the wettest days of the year across the contiguous USA, International Journal of Climatology, 24, 1873-1882.).</p> <p>Recommendation: Change the text to reflect our findings. Also, the caveats that are stated in association with the total precipitation trends, i.e. "with individual locations ranging from much more to much less than this average" also should be associated with findings of the trends of the heaviest 1% of precipitation (reported in the previous sentence). Why mention them in one place and not the other? Without such a correction, the statement fails to meet the authors' claim of conveying the "best available science" (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | <p>Thank you. This section, including figures, has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text.</p> |
| P | Knappenberger | 36 | 2 | | <p>Please explain that the nature of the distribution of daily precipitation amounts is such that an increase in total annual precipitation is accompanied by an increase in heavier precipitation amounts. Therefore, by nature, areas with increasing trends in total annual precipitation will also have increasing trends in heavier daily precipitation amounts while areas trending towards less total annual precipitation will typically receive less precipitation in heavy daily events. Such</p> | <p>Thank you. This section, including figures, has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text.</p> |

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| | | | | | <p>a correspondence would be readily visible if a map of annual precipitation trends was presented along with the regional graphs of the changes in precipitation trends by intensity level.</p> <p>Recommendation: Include text to explain this correspondence. Without such a correction, the statement fails to meet the authors' claim of conveying the "best available science" (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | |
| P | Michaels | 36 | 3 | | <p>See graphs above in Comment 47 and the content of Comment. As the teacher would say here "Show your work!"</p> <p>(Note: Referring to Page 36, Paragraph 1 with graphs for U.S. Southwest)</p> <p>Michaels, Cato Institute and University of Virginia</p> | Thank you. This section, including figures, has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Center for Biological Diversity | 36 | 5 | | <p>The first sentence refers to maps on the right, although there are no maps to the right. Make sure this section more clearly refers to and explains the two map figures that are included.</p> <p>Center for Biological Diversity</p> | Thank you. This section, including figures, has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Angel | 37 | | | <p>Maps - The maps show changes in precipitation but do not indicate the base period. In addition, the seasons should be clearly defined (e.g., summer is defined as June-August) since there is confusion by the public about astronomically defined seasons versus climatological seasons.</p> <p>Angel, Illinois State Water Survey</p> | Thank you. This section, including figures, has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Knappenberger | 37 | | | <p>Graph-Bottom of page</p> <p>This bar chart at the bottom of the page is uninterpretable. It shows the projected changes from what baseline? As we showed (Michaels, et al., 2004, Trends in precipitation on the wettest days of the year across the contiguous USA, International Journal of Climatology, 24, 1873-1882.) it is totally inappropriate to show percentile changes in fixed bins. I have a suspicion this is what is presented here, but I can't be sure because the description is inadequate.</p> <p>Recommendation: Remove this chart as it is uninterpretable. Without such a correction, the statement fails to meet the authors' claim of conveying the "best available science" (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | Thank you. This section, including figures, has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Knappenberger | 37 | | | Maps | Thank you. This section, including figures, has been modified due |

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| | | | | | <p>A simple averaging of the climate models does not accurately present the range of model outcomes when it comes to projected precipitation changes. The patterns of precipitation changes are quite different from model to model. This uncertainty is not represented at all by the maps as presented.</p> <p>Recommendation: Replace the existing maps with histograms showing the distribution of the model projections for precipitation changes for various regions of the country at various times in the future. This way the read can get a sense of model agreement/disagreement. Without such a correction, the statement fails to meet the authors' claim of conveying the "best available science" (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Tateman | 38 | | | <p>The projected change in intense low-pressure systems (strong storms) during the cold seasons for the Northern Hemisphere for various emission scenarios. There are likely to be more frequent deep low-pressure systems (strong storms) outside the tropics, with stronger winds and more extreme wave heights.</p> <p>Storm intensity has been studied intensively recently and no correlation to "climate change" was indicated, therefore inadmissible. Grade "F"</p> <p>Tateman, Public Citizen</p> | Thank you. This section, including figures, has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Zamarra | 38 | | | <p>Figure-upper left After reviewing the legend, it appears to me that the graphic is comparing the number of storms in the N. Atlantic with SSTs in the East Atlantic. Check data source / labels.</p> <p>Zamarra, STG, Inc.</p> | Thank you. This section, including figures, has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Knappenberger | 38 | 1 | 2 | <p>This statement is not supported in the scientific literature. For example, see any of the articles listed below for analyses of the trends in various extreme weather events and the related impacts—in virtually all cases, they find that 1) few long-term trends in extreme events, and 2) little change in the impacts when changing population and economic statistics are properly included in the analyses.</p> <p>Pielke, Jr., R. A., Gratz, J., Landsea, C. W., Collins, D., Saunders, M., and Musulin, R., 2008. Normalized Hurricane Damages in the United States: 1900-2005. Natural Hazards Review, Volume 9, Issue 1, pp. 29-42</p> <p>Downton, M., J. Z. B. Miller and R. A. Pielke, Jr., 2005. Reanalysis of U.S. National Weather Service Flood Loss Database, Natural Hazards Review, 6:13-22.</p> <p>Downton, M. and R. A. Pielke, Jr., 2005. How Accurate are Disaster Loss Data? The Case of U.S. Flood Damage, Natural Hazards, Vol. 35, No. 2, pp. 211-228.</p> <p>Pielke, Jr., R. A., 2005. Are there trends in hurricane destruction? Nature, Vol. 438, December, pp. E11. Brief</p> | Thank you. This section, including figures, has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |

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| | | | | | | <p>comment on K. Emanuel's "Increasing destructiveness of tropical cyclones over the past 30 years", Nature, Vol. 436, pp. 686-688.</p> <p>Pielke, Jr., R.A., S. Agrawala, L. Bouwer, I. Burton, S. Changnon, M. Glantz, W. Hooke, R. Klein, K. Kunkel, D. Mileti, D. Sarewitz, E. Thompkins, N. Stehr, and H. von Storch, 2005. Clarifying the Attribution of Recent Disaster Losses: A Response to Epstein and McCarthy, Bulletin of American Meteorological Society, Volume 86 (10), pp. 1481-1483. Reply by P.R. Epstein and J.J. McCarthy.</p> <p>Changnon, S., R. A. Pielke, Jr., D. Changnon, D., R. T. Sylves, and R. Pulwarty, 2000. Human Factors Explain the Increased Losses from Weather and Climate Extremes, Bulletin of the American Meteorological Society, 81(3), 437-442.</p> <p>Pielke, Jr., R. A. and M.W. Downton, 2000. Precipitation and Damaging Floods: Trends in the United States, 1932-97. Journal of Climate, 13(20), 3625-3637.</p> <p>Kunkel, K., R. A. Pielke Jr., S. A. Changnon, 1999: Temporal Fluctuations in Weather and Climate Extremes That Cause Economic and Human Health Impacts: A Review. Bulletin of the American Meteorological Society, 80, 6, 1077-1098.</p> <p>Recommendation: Remove this sentence. Without such a correction, the statement fails to meet the authors' claim of conveying the "best available science" (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | |
| P | Knappenberger | 38 | 1 | 5 | 5 | <p>"Droughts are becoming more severe in some regions."</p> <p>Comment: This is quite a slanted sentence. What about in the other regions? Are the drought severity trends driven by droughts in recent years (i.e. heavily weighted because they fall near the end of the record)?</p> <p>Van der Schrier et al. (van der Schrier, G., K. R. Briffa, T. J. Osborn, and E. R. Cook, 2006. Summer moisture availability across North America, Journal of Geophysical Research, 111, D11102, doi:10.1029/2005JD006745) find no trend in the percentage area of the contiguous United States experiencing either moderate or extreme moisture availability conditions for the 1901–2002 period.</p> <p>Recommendation: Either fully describe the drought trends across the United States for the past 50 years (the same period you use in the temperature trends descriptions) or remove this sentence. Without such a correction, the statement fails to meet the authors' claim of conveying the "best available science" (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | <p>Thank you. This section, including figures, has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text.</p> |
| P | Michaels | 38 | 1 | 3 | 3 | <p>"The U.S. has been experiencing more unusually hot days and nights".</p> <p>Comment: OK, that's true, but incompletely misleading. I don't think winter nights are generally considered "hot", so this must be talking about the warm part of the</p> | <p>Thank you. The suggestion has been considered, but the author team has decided to retain this as is.</p> |

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|  | | | | | | <p>year. You could reference, say Michaels et al. in Climate Research in 2001, which clearly demonstrates that the coldest nights of the winter are warming more than any other diurnal/seasonal combination.</p> <p>This is just another example of the remarkable one-sidedness of the CCSP report. The more I go through it, the more I think that it has been so poorly done on purpose—so that the reviewers would essentially write you a much better document without the FACA team having to do much at all except spout rhetoric that looks more like a NRDC or Sierra Club document on global warming than a real scientific report.</p> <p>Michaels, Cato Institute and University of Virginia</p> | |
| | P | Knappenberger | 38 | 2 | | <p>Graphs-Hurricanes</p> <p>This discussion of hurricanes is either grossly out of date or deliberately ignoring the recent scientific literature.</p> <p>The first sentence of the paragraph discusses the recent increases in the power and frequency of Atlantic hurricanes and then the following sentence discusses projections for the future. The implication of these back-to-back sentences (although admittedly unstated) is that recent changes are driven by global warming. As this is an unfair treatment of the state of scientific knowledge, rather than leading the reader to believe this, the CCSP authors should make it plainly clear that the scientific literature does not support the idea that recent changes in Atlantic hurricane patterns are “likely” driven by global warming. It should also be made abundantly clear that the scientific literature of future hurricane changes finds it “likely” that hurricane frequencies will decline in the future, and gives unclear guidance on future intensity.</p> <p>A pretty comprehensive listing of recent papers in the scientific literature concerning climate change and hurricanes is available from NOAA’s AOML (http://www.aoml.noaa.gov/general/lib/Regional/climate_change/climatechangechronology.htm). You will find that a great deal of the recent papers do not support the general sense that the CCSP authors leave with the reader.</p> <p>Recommendation: This paragraph needs be brought up to date with the literature. As it stands, it is a poor and biased treatment of the current state of scientific understanding.</p> | <p>Thank you. This section, including figures, has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text.</p> |

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| | | | | | As it now stands, the paragraph fails to meet the authors' claim of providing the "best available science" (p. 14) and of conveying "the most relevant and up-to-date information possible" (p. 14) and otherwise violates applicable objectivity requirements. Knappenberger, New Hope Environmental Services | |
| P | Keillor | 38 | 3 | | Shifting extra-tropical storm tracks (and the accompanying graphic on the same page: Projected Changes in Strong Non-Tropical Storms). This important information needs augmentation. How have the jet streams shifted over North America in response to climate change to date and how do the jet streams affect storm tracks? Does climate change alter the pace in the cross-continent progression of loops in the jet stream? How are future shifts in the jet streams and storm tracks expected to alter the frequency, persistence, and intensity of future storms and precipitation patterns? Use a few examples that led to droughts and floods. Readers need more help in grasping the significance of this aspect of climate change, and realizing that the modeling of such changes is extremely challenging. Keillor, ASFPM | Thank you. This section, including figures, has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | URS | 38 | 3 | | Shifting extra-tropical storm tracks (and the accompanying graphic on the same page: Projected Changes in Strong Non-Tropical Storms). This important information needs augmentation. How have the jet streams shifted over North America in response to climate change to date, and how do the jet streams affect storm tracks? Does climate change alter the pace in the cross-continent progression of loops in the jet stream? How are future shifts in the jet streams and storm tracks expected to alter the frequency, persistence, and intensity of future storms and precipitation patterns? Use a few examples that led to droughts and floods. Readers need more help in grasping the significance of this aspect of climate change, and realizing that the modeling of such changes is extremely challenging. URS | Thank you. This section, including figures, has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Michaels | 39 | | | Figure: Top Right Again it is important to show the spread of the models. Recommendation: There needs to be some kind of hatching on the models where the ensemble is significant or where it is too dispersed. Refer to my general comment above on showing all of the precipitation results. Michaels, Cato Institute and University of Virginia | Thank you. The suggestion has been considered, but the author team has decided to retain this as is. |

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| P | Williams | 40 | 1 | 1 | <p>Change “The build up of heat-trapping gases is driving global warming.” To “ Yet to conclusively proven, some scientists believe that the build up of heat-trapping gases is driving global warming.”</p> <p>With the recent cooling in the last few years while CO2 continues to rise, higher concentrations of CO2 in the past, the emergence from the little ice age, the last 4 ice ages, etc. this statement cannot be supported. It does not pass the stupid test (How stupid do you think I am to believe that?) Until you can explain the emergence from last ice age, the Climatic Optimum, the Medieval Warming Period, and the Little Ice Age you lack the knowledge to make these kinds of statements.</p> <p>“The average temperature of the Earth has varied within a range of about 3 degrees Celsius during the past 3,000 years. It is currently increasing as the Earth recovers from a period that is known as the Little Ice Age. (Oregon Institute of Science and Medicine)</p> <p>Williams, Public Citizen</p> | Thank you. This section, including figures, has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Keillor | 40 | 2 | | <p>Have natural carbon dioxide sinks been growing or declining in the United States?</p> <p>Keillor, ASFPM</p> | Thank you. Language on carbon dioxide sinks has been added to the revised document. |
| P | Knappenberger | 40 | 2 | 3 | <p>If sinks in the U.S. currently take up the equivalent of about one-third of U.S. emissions annually, then how can the statement in the preceding paragraph that “One-third of the carbon dioxide released from fossil fuel burning remains in the atmosphere after 100 years, and one-fifth of it remains after 1000 years” be correct? For the case of U.S. emissions, if we stopped all emissions today, all of them would be taken up by U.S. sinks in just 3 years. So how can the atmospheric lifetime be 100s to 1000s of years? This makes no sense.</p> <p>Recommendation: The atmospheric lifetime of CO2 and how it relates to carbon sinks needs to better be described.</p> <p>Knappenberger, New Hope Environmental Services</p> | Thank you. Language on carbon dioxide sinks has been added to the revised document. |
| P | URS | 40 | 2 | | <p>It is unclear whether natural carbon dioxide sinks have been growing or declining in the United States.</p> <p>URS</p> | Thank you. Language on carbon dioxide sinks has been added to the revised document. |
| P | Tateman | 41 | | | <p>Carbon sources and sinks (no quotes) is skewed to accentuate the carbon sources and diminutise the sinks, and the primary source / sink is not even mentioned, the ocean. Grade "F".</p> <p>Tateman, Public Citizen</p> | Thank you. Language on carbon dioxide sinks has been added to the revised document. |

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| P | Keillor | 41 | 2 | | Does melting permafrost depend on warmer Arctic winters? Has the melting of permafrost and the accompanying release of methane and carbon dioxide to the atmosphere already begun in Alaska and Canada, as has occurred in Siberia? If not, what threshold of temperature rise in arctic warming is expected to bring significant release of these gases? Keillor, ASFPM | Thank you. We agree the issue is important; however, we chose to highlight and discuss it elsewhere in the report. |
| P | Michaels | 41 | 2 | 5 | No reference is given, but one that should be is Delisle (2007) Geophysical Research Letters, who used a 600 layer model, which extended 300 feet into the permafrost. Previous models go about 10 feet. With this more complete model, Delisle reports that continuous permafrost in Alaska and Siberia will survive over the next 100 years, even if a significant warming takes place. Delisle wrote: “Based on this result and on the presented analysis, it appears that all areas north of 60°N will maintain permafrost at least at depth. North of 70°N, surface temperature values today are in general below -11°C. These areas should maintain their active layer. It appears unlikely that almost all areas with near-surface permafrost today will lose their active layer within the next 100 years”. Delisle claims that the new model is far more consistent with field measurements and far more realistic in terms of including the interaction with the deeper and colder permafrost core. Another common fear is that melting of permafrost will release trapped methane. Delisle notes this at the end of his article: “A second, rarely touched upon question is associated with the apparently limited amount of organic carbon that had been released from permafrost terrain in previous periods of climatic warming such as e.g. the Medieval Warm Period or during the Holocene Climatic Optimum [the warmer millennia after the end of the recent ice age—see our next section]. There appear to be no significant CH4 [methane] excursions in ice core records of Antarctica or Greenland during these time periods which otherwise might serve as evidence for a massive release of methane. Recommendation: CCSP needs to note these findings. As it now stands, the statement fails to meet the authors’ claim of representing the “the best available science” (p. 14) and of conveying “the most relevant and up-to-date information possible” and otherwise violates applicable objectivity requirements. Michaels, Cato Institute and University of Virginia | Thank you. We agree the issue of permafrost is important; however, we chose to highlight and discuss it elsewhere in the report. |
| P | Knappenberger | 42 | | | Bullet 1 Change the phrase “more Americans vulnerable to climate change impacts” to “more | Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re- |

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| | | | | | American vulnerable to climate impacts.” Projected climate change plays only a very small part in overall natural climate and climate variability of a region. Knappenberger, New Hope Environmental Service | examine the issue when the Second Draft is released for review. |
| P | Knappenberger | 42 | | | Bullet 3 This bullet is plain and simply the pessimistic and selective opinions of the authors and apparently (there is no citation given) not based at all on any sort of analysis. Please add the citation to a quantitative ranking of the activities that “Americans hold dear” and a weighting of how the opportunities to pursue those ranked activities are projected to change in the future. Are the reduced opportunities offset by increased opportunities to pursue other activities that perhaps even more of us hold dear? Please cite the appropriate analysis or remove the bullet. After all, this report is supposed to be science-based is it not? Without such a correction, the statement fails to meet the authors’ claim of providing the “best available science” (p. 14) and otherwise violates applicable objectivity requirements. Knappenberger, New Hope Environmental Services | Thank you. Tourism has been incorporated into a new bullet on linked sectors and regions. |
| P | Michaels | 42 | | | Bullet 3 True—MAYBE—but people always have found different ways to entertain themselves. Won’t there be more people going to the beach if it is warmer? Won’t more people go in the water if it is warmer? Recommendation: This silly bullet needs to be changed to something like “climate change is likely to change the variety of recreational activities that Americans enjoy”. Instead, what you have just asserted is another example of the “stupid people hypothesis”. Has anyone at CCSP noted the increasing number of combined ski/golf resorts? Michaels, Cato Institute and University of Virginia | Thank you. Tourism has been incorporated into a new bullet on linked sectors and regions. |
| P | Pogue | 42 | | | Bullet Missing. Add a bullet on the importance of protecting critical facilities against the impacts of climate change. Critical facilities are defined as shelters, hospitals, first responders, nuclear sites, and wastewater and sewage treatment plants. These facilities need extra protection to the 500-year design standard, and obviously every precaution should be taken to locate them out of all areas subject to flooding, coastal erosion, coastal inundation, and riverine flooding. Pogue, CFM - ASFPM Coastal Committee Co-Chair | Thank you. We agree the issue is important; however, we chose to highlight and discuss it elsewhere in the report. |
| P | URS | 42 | | | Bullet 4 It is true that the insurance industry is particularly vulnerable to increasing extreme | Thank you. The author team feels that this issue is beyond the scope of/not relevant to this report. |

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| | | | | | <p>weather events, but explain how they can help society manage the risks. For example, mention that property owners taking the initiative to mitigate their homes should receive financial incentives; market forces should be used to both spread and aggregate the risk. We should mention up front the critical financial role that the insurance industry plays in risk.</p> <p>URS</p> | |
| P | URS | 42 | | | <p>Bullet Missing. Add a bullet on the importance of protecting critical facilities against the impacts of climate change. Critical facilities are defined as shelters, hospitals, first responders, nuclear sites, and wastewater and sewage treatment plants. These facilities need extra protection to the 500-year design standard, and obviously every precaution should be taken to locate them out of all areas subject to flooding, coastal erosion, coastal inundation, and riverine flooding.</p> <p>URS</p> | Thank you. We agree the issue is important; however, we chose to highlight and discuss it elsewhere in the report. |
| P | URS | 42 | | | <p>Add a discussion about FEMA’s new Risk Mapping initiative. With the severe impacts of climate change, more dialogue is needed to on how to assess and communicate the risks caused by these changes, such as the rise in sea levels, coastal erosion, etc. FEMA is in the process of moving forward with this new Phase of their flood mapping program, to have a more seamless program with other mitigation activities, risk assessment tools, and flood hazard mapping.</p> <p>URS</p> | Thank you. We agree the issue is important; however, we chose to highlight and discuss it elsewhere in the report. |
| P | Knappenberger | 43 | 2 | 1 | <p>Are the writers of this sentence at all familiar with the climate history of the United States??? There are scores of books and articles written about the impacts of climate variations on virtually every aspect of the development of the U.S.</p> <p>Recommendation: Remove this sentence. Without such a correction, the statement fails to meet the authors’ claim of conveying the “best available science” (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | Thank you. The comment has been considered, but is judged to contain no suggestion relevant to improvement of the scientific content of the USP report. |
| P | Knappenberger | 43 | 2 | 2 | <p>Several papers in the peer-reviewed scientific literature have found that the vulnerability of American cities to heat waves has been declining since the 1960s, despite rising heat (Davis et al., 2003, International Journal of Biometeorology; Davis et al., 2003, Environmental Health Perspectives) and others have shown that the impact of flooding on American society has shown a slight decline of the 20th century (Downton et al., 2005, Natural Hazards Review).</p> <p>(Note: Figures inserted here. Part of electronic file)</p> | Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |


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| | | | | | <p>Annual average excess summer mortality due to high temperatures, broken down by decade, for 28 major cities across the United States. For each city each of the three bars represents the average mortality during successive decades (left bar 1964-66 + 1973-1979; middle bar 1980-1989, right bar 1990-1998). Bars of different color indicate a statistically significant difference. No bar at all means that no temperature/mortality relationship could be found during that decade/city combination (taken from Davis et al., 2003, Environmental Health Perspectives).</p> <p>U.S. flood damage normalized for changes in tangible wealth (Downton et al., 2005).</p> <p>Recommendation: Remove this misleading sentence. Without such a correction, the statement fails to meet the authors' claim of conveying the "best available science" (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | |
| P | Michaels | 43 | 2 | 1 | <p>See specific comment 2, above. (Note: Referring to comment on page 4, 2nd paragraph) Michaels, Cato Institute and University of Virginia</p> | Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Keillor | 44 | | | <p>Graph The view perspective of this important graphic needs to be altered with a steeper angle from the horizontal, and shorelines made darker to reveal the coasts, particularly the coasts of the Great Lakes which are hidden behind growth bars in the existing graphic. Much of the growth occurred along the nation's coasts. Keillor, ASFPM</p> | Thank you. This figure has been removed. |
| P | Knappenberger | 44 | | | <p>Banner This statement is silly. Does a scenario exist in which future population growth and population dynamics will occur in such a way as to reduce American's vulnerability to climate change? More people = more vulnerability. Recommendation: Remove this pull quote. Knappenberger, New Hope Environmental Services</p> | Thank you. The comment has been considered, but is judged to contain no suggestion relevant to improvement of the scientific content of the USP report. |
| P | Knappenberger | 44 | 2 | 2 | <p>The map of population growth on p. 44 does not reflect the statement. Southern California, Texas, Florida and the major cities of the U.S. appear to be the fastest growing areas. The 'mountainous West' doesn't seem to be anywhere near the fastest growing area. Recommendation: Remove this sentence or explain why it doesn't square with the</p> | Thank you. The comment has been considered, but is judged to contain no suggestion relevant to improvement of the scientific content of the USP report. |

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| | | | | | map. Knappenberger, New Hope Environmental Services | |
| P | Knappenberger | 44 | 2 | | <p>Last sentence It is well-established in the literature that damage from hurricanes in the U.S. has not increased when changes in wealth and population are taken into account (Pielke Jr. et al., 2008, Natural Hazards Review). Nor is there a strong consensus in the most recent scientific literature that an enhanced greenhouse effect will lead to an increased risk of harm along to the United States from future hurricanes (once population and wealth changes are accounted for.)</p> <p>Recommendation: Remove this misleading sentence. Without such a correction, the statement fails to meet the authors' claim of conveying the "best available science" (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | Thank you. This sentence has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Davis | 44 | 3 | | <p>The overall tendency of the U.S. populace has been to migrate to warmer locations. Despite people experiencing the exact conditions that this report argues will create disastrous consequences to society, they not only are surviving, but seem to be thriving. I don't understand why so many people would willingly place themselves into such grave danger? Obviously, most Americans who have the wherewithal prefer to live where it is warmer.</p> <p>Davis, University of Virginia</p> | Thank you. The statements are not about the general climate so much as about extremes of heat and other severe weather, which are projected to increase. |
| P | Knappenberger | 44 | 3 | | <p>Last Sentence First of all, Florida and Texas are relatively immune from heat-related mortality in their urban regions (e.g., Davis et al., 2003, International Journal of Biometeorology; Davis et al., 2003, Environmental Health Perspectives). And secondly, the vulnerability to these cities is to the elements of climate much more so than to climate change. Further, the population growth in these states mean that people are moving there by choice, either because of, or in spite of the climate.</p> <p>Recommendation: Emphasize that the increased vulnerability from population movement is from the elements of climate much more so than climate change. In other words, the Gulf Coast cities are vulnerable to hurricane impacts...which are an element of the region's climate. If future climate change somehow modifies the occurrence of hurricanes, this change is small compared with the fact that hurricanes exist in the first place. The same is true for water stresses in</p> | Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |

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| | | | | | the desert and heavy rain in the northeast. These events are part of the region’s climate, climate change won’t alter that fact. Without such a clarification, the statement fails to meet the authors’ claim of conveying the “best available science” (p. 14) and otherwise violates applicable objectivity requirements. Knappenberger, New Hope Environmental Services | |
| P | Keillor | 45 | 3 | | The tone of this paragraph that begins with a statement about development choices is oddly out of step with the sobering information provided earlier in this chapter and elsewhere in this draft report. The development choices made by individuals, corporations and other institutions, influenced by government, seem in many places to be on a “collision course” with some of the consequences of climate change (storms, floods, droughts, sea level rise, etc.). This stronger tone, commonly used by natural hazard experts, seems as appropriately applied to rapidly-growing cities in the dry Southwest as it is commonly applied to development in coastal areas. Keillor, ASFPM | Thank you. This paragraph has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Keillor and Pogue | 45 | 3 | | The tone of this paragraph that begins with a statement about development choices is oddly out of step with the sobering information provided earlier in this chapter and elsewhere in this draft report. The development choices made by individuals, corporations and other institutions, influenced by government, seem in many places to be on a “collision course” with some of the consequences of climate change (storms, floods, droughts, sea level rise, etc.). This stronger tone, commonly used by natural hazard experts, seems as appropriately applied to rapidly-growing cities in the dry Southwest as it is commonly applied to development in coastal areas. Keillor and Pogue, ASFPM | Thank you. This paragraph has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Knappenberger | 45 | 3 | 1 | Why have you skipped over climate as one of the considerations in this discussion of why American’s make the development choices they do? You list a host of things, but leave out “the type of climate” when undoubtedly this is a major consideration of many Americans. The fact is American’s are (re)locating in regions of the country with a warmer climate. More American’s are probably at climate risk simply by relocating than by actual climate change. Recommendation: Add to the list of things American’s consider when developing, “the region’s climate.” Without such an inclusion, the statement fails to meet the authors’ claim of conveying the “best available science” (p. 14) and otherwise violates applicable objectivity requirements. | Thank you. This paragraph has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |

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| P | Knappenberger | 46 | | | <p>Knappenberger, New Hope Environmental Services</p> <p>Box-Spotlight on Alaska</p> <p>The Inuit people of Alaska have been historically nomadic. As such, they didn't have "ancestral homes." These coastal villages are a relatively new feature as the Inuit have been forced to settle rather than pursue their nomadic lifestyle. Establishing these villages on the Alaska coastline was a bad idea any way, and the coastline has been eroding for at least 50 years. See any of these references:</p> <p>Harper, J.R., 1978. Coastal erosion rates along the Chukchi Sea coast near Barrow, Alaska. <i>Arctic</i>, 31(4), 428-433.</p> <p>Hartwell, A.D., 1973. Classification and relief characteristics of northern Alaska's coastal zone. <i>Arctic</i>, 26(3), 244-252.</p> <p>Hume, J.D., and M. Schalk, 1967. Shoreline processes near Barrow Alaska: a comparison of the normal and the catastrophic. <i>Arctic</i>, 20(2), 86-103.</p> <p>Hume, J.D., et al., 1972. Short-term climate changes and coastal erosion, Barrow Alaska. <i>Arctic</i>, 25(4), 272-278.</p> <p>Lewellen, R., 1977. A study of Beaufort Sea coastal erosion, northern Alaska. <i>Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of the Principal Investigators, Vol. XV (Transport)</i>. National Oceanic and Atmospheric Administration, pp. 491-527.</p> <p>MacCarthy, G.R., 1953. Recent changes in the shoreline near Point Barrow, Alaska. <i>Arctic</i>, 6(1), 44-51.</p> <p>Recommendation: Change the sentence to read "A number of villages are now facing the prospect of having to relocate to safer ground as they were unwisely built upon an unstable and eroding shoreline."</p> <p>Knappenberger, New Hope Environmental Services</p> | Thank you. This spotlight has been removed. |
| P | Michaels | 46 | 2 | | <p>Box-Spotlight on Alaska</p> <p>These residents were warned of this by Hume and Schalk in <i>Arctic</i> in 1967! Following their analysis of a very damaging storm in 1963, they said "Another such storm can be expected, and care should be exercised in the selection of building sites...[which] would be at least 30 feet above sea level and either inland or along a coast which is not eroding".</p> <p>Recommendation: Change the box and note that the problem of rapid erosion of the north and west Alaskan coast has been known for over four decades, and that with or without global warming, this continues. Global warming may, in fact, be the final stimulus that forces these populations to adapt into safer ground.</p> <p>Michaels, Cato Institute and University of Virginia</p> | Thank you. This spotlight has been removed. |
| P | Knappenberger | 46 | 3 | 2 | <p>This statement about maple syrup production is simply an oft-repeated claim that is not supported by an analysis of the climate data.</p> <p>I reproduce Figure 5.5 from the NERA report (NERA, 2001. <i>The New England Regional Assessment – Preparing for a Changing Climate: the Potential Consequences of Climate Variability and Change</i>. New England Regional</p> | Thank you. We have accepted your comment and mention syrup elsewhere in a different manner. |

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| | | | | | | <p>Overview. U. S. Global Change Research Program, Durham, NH, 96pp.) that depicts the critical January-April temperature history (averaged across the states of VT, NH, ME, NY) along with the maple syrup production history from Vermont, the U.S., and Canada. Notice that temperature history is dominated by short-term annual and decadal fluctuations more than by an overall long-term trend, at least over the past 70-80 years. The January-April temperature history is better characterized by three periods—a warming from 1915 to the mid-1950s, a cooling from the mid-1950s to the early 1970s, and then a warming since then. Notice that New England’s maple syrup production history does not comport with these multi-decadal fluctuations. Syrup production declined from about 1915 to about the early 1970s, and has remained relatively steady since then. The decline took place during a period of warming and continued through a period of cooling temperatures. Obviously, cause and effect are not operating here. Further, during the past several decades, a period of slightly warming temperatures, production appears to show no overall trend. In Canada, syrup production has increased since records are first available in 1970—slowly at first, and then more rapidly during the past 2 decades—and bears little relationship to the temperature history depicted in the Figure. Overall, this indicates that other aspects of the maple syrup industry largely dominate the patterns of syrup production—such things as changing technology, number of trees tapped, economic conditions, etc.</p> <p>(Note: figure inserted here. Part of electronic file)</p> <p>Maple syrup production in Vermont (blue line), total United States (pink line), Canada (green line) and the 4-state (VT, NY, ME, NH) average January-April (black line) temperature history. This figure is reproduced from the New England Regional Assessment, Figure 5.5. (NERA, 2001. The New England Regional Assessment – Preparing for a Changing Climate: the Potential Consequences of Climate Variability and Change. New England Regional Overview. U. S. Global Change Research Program, Durham, NH, 96pp.)</p> <p>Recommendation: Remove the sentence on climate as the primary driver responsible for shifting maple syrup production from New England to Canada. Without such a correction, the statement fails to meet the authors’ claim of conveying the “best available science” (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | |

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|  | P | Knappenberger | 46 | 3 | | <p>Citation 4 Citation 4 is to a report from the Union of Concerned Scientists!</p> <p>How does the UCS report fit into the description of the “About this Report” of page 14:</p> <p>This report is based on published, peer-reviewed data and reports including the Synthesis and Assessment Products completed by the U.S. Climate Change Science Program (CCSP, 2006 through 2008), the Intergovernmental Panel on Climate Change (IPCC, 2007) assessments, the U.S. National Assessment of the Consequences of Climate Variability and Change (NAST, 2000 through 2001), the Arctic Climate Impact Assessment (ACIA, 2004 through 2005), the National Research Council’s Transportation Research Board report on the Potential Impacts of Climate Change and U.S. Transportation (NRC, 2008), and other peer-reviewed assessments.</p> <p>To incorporate the latest findings and fill gaps, this report also draws directly from articles in peer-reviewed scientific journals as well as widely available government data and information compiled on a regular basis for public use, including census figures and statistics on energy usage and greenhouse gas emissions. The author team did not conduct original research for this report, but rather drew on existing peer-reviewed research. In order to convey the most relevant and up-to-date information possible, the report does contain summaries, tables, and graphics using updated data sets drawn from peer-reviewed literature and official government data.</p> <p>In fact, the UCS report does not fit into this description at all.</p> <p>Recommendation: Either remove the reliance on the UCS report, or redo the “About this Report” section to indicate that you are relying on information from advocacy organizations with an openly-stated political agenda. Otherwise you are grossly misleading the reader.</p> <p>Knappenberger, New Hope Environmental Services</p> | <p>Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text.</p> |
| | P | Knappenberger | 47 | | | <p>Box-Spotlight on Skiing Another pessimistic scenario on climate change’s impact of recreational activities and the economy dependent on them, this time on the ski industry in the West.</p> | <p>Thank you. Tourism has been incorporated into a new bullet on linked sectors and regions.</p> |

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| | | | | | <p>And again, the citation is to a non-peer reviewed report.</p> <p>Recommendation: Remove this box and reference. Knappenberger, New Hope Environmental Services</p> | |
| P | Michaels | 47 | | | <p>Virtually every change is for the worse. How can this be? I can name plenty of activities that would welcome shorter winters: virtually all of the “summer sports”, for example. This page needs balance—I leave it up to the writers to supply some. It also needs a teeny bit of economics. If the ski season becomes compressed, there are fewer days available, which means the supply is lowered. Consequently, the price of lift tickets will rise, lowering the number of days required for break-even. You might mention that skiing might become more expensive and that people will naturally substitute other forms of recreation (or even hold on to more warm-season activities). In addition, reference 8 about the Carolina beaches does not meet the “About this Report” standard on Page 14 Michaels, Cato Institute and University of Virginia</p> | <p>Thank you. Tourism has been incorporated into a new bullet on linked sectors and regions.</p> |
| P | Knappenberger | 47 | 2 | 1 | <p>Enough with the pessimism.</p> <p>Recommendation: Change the sentence to read “A changing climate may mean reduced opportunities for some activities and increased opportunities for many other of the activities that Americans hold dear.” Knappenberger, New Hope Environmental Services</p> | <p>Thank you. The author team feels that this issue is beyond the scope of/not relevant to this report.</p> |
| P | Knappenberger | 47 | 2 | 2 | <p>Warming SSTs along the U.S. Gulf and Atlantic shores should encourage coral reefs to expand northward. In fact, evidence of northerly range expansion of elkhorn and staghorn has recently been reported (Precht, W.F., and R.B. Aronson, 2004. Climate flickers and range shifts of reef corals. Frontiers in Ecology and the Environment, 2, 307-314). Currently, the southern portions of Florida define climatologically the northernmost portion of the coral habitat in the western Atlantic, a warming climate presents the opportunity for a habitat expansion that could bring corals further northward and closer to the U.S. mainland. Since coral reefs represent a major tourist destination, not only would a northward range expansion be a benefit to the corals themselves, but may well also represent enhanced economic opportunities along the southeastern U.S. coast.</p> <p>Recommendation: Update the paragraph on the changing patterns of recreational activities to include the likelihood that coral reefs will expand northward into U.S. coastal waters and increase recreational opportunities associated with them.</p> | <p>Thank you. Coral reefs are in trouble for lots of reasons- it is doubtful that warming will help them in the long run.</p> |

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| | | | | | <p>As it now stands, the statement fails to meet the authors’ claim of providing the “best available science” (p. 14) and of conveying “the most relevant and up-to-date information possible” (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | |
| P | Knappenberger | 47 | 3 | 1 | <p>While skiing opportunities may decline in some areas of the Northeast, many of the regions ski areas are transforming themselves into “four seasons” resorts – offering activities year round to offset some of the lost revenue from the ski seasons (for example, http://www.completenewengland.com/index.php/2008/05/17/the-survival-of-the-new-england-ski-resort-species/)</p> <p>Recommendation: Update this sentence to indicate that ski resorts are adapting to the changing conditions by expanding the activities that they offer.</p> <p>As it now stands, the paragraph fails to meet the authors’ claim of conveying “the most relevant and up-to-date information possible” (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | Thank you. Tourism has been incorporated into a new bullet on linked sectors and regions. |
| P | Knappenberger | 47 | 3 | 1 | <p>Again, the citation (number 7) is to the Union of Concerned Scientists report. They have a stated political agenda on climate change!</p> <p>Recommendation: Either remove the reliance on the UCS report, or redo the “About this Report” section to indicate that you are relying on information from advocacy organizations with an openly-stated political agenda. Otherwise you are grossly misleading the reader.</p> <p>Knappenberger, New Hope Environmental Services</p> | Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Knappenberger | 47 | 3 | | <p>Another pessimistic scenario on climate change’s impact of recreational activities and the economy dependent on them, this time on the shores of North Carolina—a coastline that is booming. And again, the citation is to a non-peer reviewed report.</p> <p>Recommendation: Remove these sentences and reference.</p> <p>Knappenberger, New Hope Environmental Services</p> | Thank you. The author team feels that this issue is beyond the scope of/not relevant to this report. |
| P | Davis | 48 | | | <p>Figure-Bottom Left-Caption This note that heat-related deaths in Arizona are 13 times the national average is</p> | Thank you. We have clarified the figure caption to include appropriate references. |

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| | | | | | <p>surprising (and by surprising, I mean wrong). My research shows that there are no excess heat-related deaths in Phoenix owing to the population’s adaptation to the heat. (Davis, R.E., P.C. Knappenberger, P.J. Michaels, and W.M. Novicoff (2003), Changing Heat-related Mortality in the United States. Environmental Health Perspectives, 111, 1712-1718 (doi:10.1289/ehp.6336)). You are much more likely to see human mortality impacts in places where heat is less common, such as the Midwest or Northeast (see Kalkstein, L.S. and R.E. Davis (1989). Weather and Human Mortality: An Evaluation of Demographic and Inter-regional Responses in the United States. Annals of the Association of American Geographers, 79, 44–64). Delete the existing caption and replace it with “Even though the average number of hours per summer day in Phoenix that the Heat Index was over 100°F has doubled over the past 50 years, there is no evidence of increasing heat-related mortality, primarily because the populace has adapted to these uncomfortable conditions.”</p> <p>Davis, University of Virginia</p> | |
| P | Davis | 48 | | | <p>Is the frequency of rainfall increasing (as you state here) or is drought increasing? You can’t have it both ways. Why don’t you decide on precisely how you think U.S. climate is really going to change, then decide on which sets of disasters are therefore imminent?</p> <p>Davis, University of Virginia</p> | Thank you. We have clarified the figure caption to include appropriate references. |
| P | Knappenberger | 48 | | 2 | <p>Figure Caption</p> <p>This number is seemingly out of the blue. True, the claim is made in citation 15 (Baker et al., 2002) but it is neither backed by an analysis (mortality was not tabulated by Baker et al. 2002) nor a reference. Baker et al. state that “Hot days take a toll on human life, resulting in about 30 heat-related deaths per year in Arizona, about 13 times the national rate.” The CDC lists the annual U.S. average heat-related mortality (from 1999-2003) to be 688 deaths per year (see http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5529a2.htm). The U.S. Census lists the population of Arizona to be about 6 million and the population of the U.S. to be about 300 million (see http://quickfacts.census.gov/qfd/states/04000.html). A simple calculation shows that the heat-related mortality in Arizona to be about 5 deaths per million people (30/6 million), while that of the U.S. to be about 2.3 deaths per million (688/300 million). So Arizona’s annual heat-related mortality is only about twice the U.S. average, not 13 times.</p> | Thank you. We have clarified the figure caption to include appropriate references. |

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| | | | | | <p>Recommendation: Change the caption accordingly. The citation is clearly in error. As it now stands, the statement fails to meet the authors' claim of providing the "best available science" (p. 14) and of conveying "the most relevant and up-to-date information possible" (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | |
| P | Knappenberger | 48 | 1 | 3 | <p>This sentence contains a long list of negative things associated with city living. Based on your statement that "80 percent of the U.S. population resides in urban areas" don't you think that there must be some positive aspects?</p> <p>Recommendation: Include a list of the benefits of urban living to contrast with the list of negatives. In fact, it should be made obvious that the positives far outweigh the negatives, or why else would 80% of our population reside there?</p> <p>As it now stands, the statement fails to meet the authors' claim of providing the "best available science" (p. 14) and of conveying "the most relevant and up-to-date information possible" (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | <p>Thank you. The text in question has undergone major revisions that we believe address the reviewer's concerns. The reviewer may re-examine the issue when the Second Draft is released for review.</p> |
| P | Knappenberger | 48 | 1 | | <p>Last sentence Air quality has been increasing and air pollution emissions have been decreasing across the United States for the past 20-30 years (U.S. EPA, http://www.epa.gov/airtrends/sixpoll.html).</p> <p>Recommendation: Remove "air pollution" from the sentence. As it now stands, the statement fails to meet the authors' claim of providing the "best available science" (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | <p>Thank you. The text in question has undergone major revisions that we believe address the reviewer's concerns. The reviewer may re-examine the issue when the Second Draft is released for review.</p> |
| P | Williams | 48 | 1 | | <p>last sentence: Delete "air pollution" from sentence. Air pollution is a cause of increased population. In Phoenix we are under a strict mandate to reduce air pollution which I am directly involved in and it is not caused by "climate related changes. Ozone is exacerbated by rising temperatures but the underlying cause is people. Our primary problem is dust (PM10) which is due to too many cars on the road and improve dust mitigation practices.</p> <p>Williams, Public Citizen</p> | <p>Thank you. This sentence has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text.</p> |

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| P | Davis | 48 | 2 | | <p>Delete this entire paragraph. Urban warming is completely independent of anthropogenic greenhouse-gas induced warming. If cities are bellwethers of climate impacts, then why, for example, are heat-related mortality rates declining in cities? (See, for example, Davis, R.E., P.C. Knappenberger, W.M. Novicoff and P.J. Michaels (2003b). Decadal changes in summer mortality in U.S. cities. International Journal of Biometeorology, 47, 166–175). Why isn't there evidence of a massive exodus to rural areas? How can you relate "drought" to urbanization? Drought is related to a lack of rainfall, and urbanization has nothing to do with that (in fact, some recent research in and around Atlanta indicates that the presence of urban areas actually increase rainfall; see, for example, Atmospheric Environment, Volume 34, Number 3, February 2000 , pp. 507-516.)</p> <p>Davis, University of Virginia</p> | <p>Thank you. This paragraph has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text.</p> |
| P | Keillor and Pogue | 48 | 2 | | <p>Paragraphs 2,4,5 and Page 49, Paragraph 1</p> <p>Throughout these paragraphs is scattered quantitative information on the incidence of urban heat island effects, heat waves, floods (inland and coastal) before and after projected climate change. Collectively, this information provides a powerful sense of the challenge of Adaptation without Mitigation and the scale of a few climate change challenges facing North Americans. This quantitative information bears repeating in the Executive Summary.</p> <p>Keillor and Pogue, ASFPM</p> | <p>Thank you. These paragraphs have been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text.</p> |
| P | Knappenberger | 48 | 2 | | <p>The urbanization changes of the local climate that are described are as large (or larger) than the projected climate changes. And yet catastrophe has not been observed.</p> <p>Recommendation: Make it clear to the reader that the urbanization changes to the local thermal climate are as large, or larger, than any projected climate changes. And yet cities have adapted and thrive—clear evidence that they are able to deal with warmer temperatures. As it now stands, the statement fails to meet the authors' claim of conveying "the most relevant and up-to-date information possible" (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | <p>Thank you. The author team feels that this issue is beyond the scope of/not relevant to this report.</p> |
| P | URS | 48 | 2 | | <p>Paragraphs 2, 4, 5, and Page 49, Paragraph 1: Throughout these paragraphs there is scattered quantitative information on the incidence of urban heat island effects, heat waves, and floods (inland and coastal), both before and after projected climate change. Collectively, this information provides a powerful sense of the</p> | <p>Thank you. These paragraphs have been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text.</p> |

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| | | | | | challenge of Adaptation without Mitigation, and the scale of a few climate change challenges facing North Americans. This quantitative information bears repeating in the Executive Summary. URS | |
| P | Knappenberger | 48 | 3 | | More doom and gloom talk about city life and climate change—despite the fact that cities have experienced urban temperature effects as great or greater than projected climate changes and yet they continue to grow and thrive. Recommendation: Make it clear to the reader that the urbanization changes to the local thermal climate are as large or larger than any projected climate changes. And yet cities have adapted and thrive—clear evidence that they are able to deal with warmer temperatures. As it now stands, the statement fails to meet the authors’ claim of providing the “best available science” (p. 14) and of conveying “the most relevant and up-to-date information possible” (p. 14) and otherwise violates applicable objectivity requirements. Knappenberger, New Hope Environmental Services | Thank you. The author team feels that this issue is beyond the scope of/not relevant to this report. |
| P | Davis | 48 | 4 | 1 | Delete the phrase “combined with the urban heat island effect.” Davis, University of Virginia | Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re-examine the issue when the Second Draft is released for review. |
| P | Davis | 48 | 4 | | Using the Chicago 1995 heat wave as an example of future health impacts is a poor choice. A climatologically very similar heat wave occurred in Chicago in 1999 and produced virtually no heat-related mortality. Obviously simple adaptations mitigated against a recurrence. I suggest replacing the paragraph with the following: “Although people might mistakenly look at the 1995 Chicago heat wave as an example of what might be in store for the future given increasing heat wave severity or duration, a very similar heat wave in 1999 in Chicago had no impact (see Palecki, M.A., S.A. Changnon, and K.E. Kunkel, 2001, The nature and impacts of the July 1999 heat wave in the midwestern United States: Learning from the lessons of 1995, Bulletin of the American Meteorological Society, 82, 1353–1367). This provides evidence that cities and their residents can easily adapt to future conditions and minimize their impact, such that there will likely be little to no effect on human morbidity or mortality from climate change.” Davis, University of Virginia | Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Knappenberger | 48 | 4 | 2 | While heat waves will likely increase in intensity and frequency in urban environments (a combination of climate change and urbanization), it has been | Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer |

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| | | | | | <p>demonstrated in the literature that when population changes are taken into account, the sensitivity of the population of America’s major cities to extreme high temperatures has been significantly declining over the past several decades as we have become better adapted to such conditions (Davis et al., 2003, International Journal of Biometeorology; Davis et al., 2003, Environmental Health Perspectives). Obviously, a growing and aging population means a higher absolute number of deaths, but absolute deaths is a grossly misleading number.</p> <p>Recommendation: Remove this misleading sentence entirely. As it now stands, the statement fails to meet the authors’ claim of providing the “best available science” (p. 14) and of conveying “the most relevant and up-to-date information possible” (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | <p>pertinent to the document text.</p> |
| P | Knappenberger | 48 | 4 | | <p>Last two sentences How can you talk about Chicago in 1995 and not Chicago in 1999? As has been published in the scientific literature (and undoubtedly known to the CCSP authors), a heat wave of nearly similar intensity struck Chicago during the summer of 1999 and the mortality was much less than in 1995 because the city was better prepared (Palecki, M.A., S.A. Changnon, and K.E. Kunkel, 2001. The nature and impacts of the July 1999 heat wave in the midwestern United States: Learning from the lessons of 1995, Bulletin of the American Meteorological Society, 82, 1353–1367.). Chicago didn’t redesign its city between 1995 and 1999, but it did redesign its response measures to heat waves. And it was quite successful. Clearly, if heat wave intensity and/or frequency increase in the future, cities will better prepare for them.</p> <p>Recommendation: Remove these misleading sentences entirely. And replace them with the example of Chicago’s rapid improvement in its response to heat waves and how such adaptive measures will take place in the future and better prepare us for increasing heat waves and likely lower the population’s sensitivity to them. As it now stands, the statement fails to meet the authors’ claim of providing the “best available science” (p. 14) and of conveying “the most relevant and up-to-date information possible” (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | <p>Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text.</p> |
| P | Knappenberger | 48 | 5 | 1 | <p>Somehow you forgot to include the part about more damages occurring because there is going to be more things to damage in the future.</p> | <p>Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer</p> |

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| | | | | | <p>Recommendation: Add a phrase to include increased wealth in harm’s way. As it now stands, the statement fails to meet the authors’ claim of providing the “best available science” (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | <p>pertinent to the document text.</p> |
| P | Knappenberger | 49 | 3 | 2 | <p>What is the basis for this sentence? Is there a source for this statement or is it wild speculation? Is there documentation of cities shifting funds from “social programs to cope with necessary emergency responses to extreme weather” to meet the “rising expenses to city health systems to cope with increased summer hospital admissions due to excessive heat”? It seems that just the opposite likely occurs. Cities spend more on social programs to be better prepared for extreme weather such as heat waves so to avoid more hospital admissions.</p> <p>Recommendation: Either provide a citation or remove this sentence.</p> <p>Knappenberger, New Hope Environmental Services</p> | <p>Thank you. This sentence has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text.</p> |
| P | Knappenberger | 50 | | | <p>Figure-Bottom Left</p> <p>What is the point of this elementary exercise? Of course lightning increases with temperatures—it largely comes from convective storms which arise from summer heating. The illustration appears to show that lightning-related insurance claims asymptotically increase at about 75°F...thus there appears to be no increased risk above 75°F, so why worry about climate change when most parts of the country exceed 75°F routinely in the summer?</p> <p>Recommendation: Remove this figure. It is confusing. Replace it with a figure showing population/wealth adjusted lightning damages with time.</p> <p>Knappenberger, New Hope Environmental Services</p> | <p>The discussion provides a concrete illustration of the relevance of climate to small-scale losses, and a mapping of how the physical outcomes manifest in the insurance sector (and thus the economy). The illustration documents actual claims, and thus indicates that claims are occurring across this entire temperature band. If claims only occurred above 75 degrees the relevance of the information may be lower. Many locations of concern to insurers and property owners have extended periods of time below 75 degrees F.</p> |
| P | Knappenberger | 50 | 2 | | <p>2nd to last sentence</p> <p>What is the purpose of this sentence? This assessment report is on climate change, not insurance losses. It merely serves as a cheap excuse to show the trend in insured losses from catastrophes which is intended to mislead. Yes it shows damages are increasing, but it makes no mention that the reason that they are increasing is that the underlying wealth subject to damage has increased. The implication of the figure is that extreme weather events causing damage are increasing, when in fact, when the data are properly adjusted for wealth changes, no such trend is present.</p> | <p>This section of the report concerns the implications of climate change for society. Insurance is one of the key sectors in which extreme weather events manifest. Discussion of the dual role of increasing wealth and increasing extremes is included to avoid misunderstanding.</p> |

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| | | | | | <p>Recommendation: Remove the sentence and the figure. It is misleading unless further clarified. As it now stands, the statement fails to meet the authors’ claim of providing the “best available science” (p. 14) and of conveying “the most relevant” information possible (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | |
| P | Michaels | 50 | 2 | | <p>Graph-Top Right and 2nd paragraph You cite Changnon et al. in the text (ref 22) simply saying that insurers provide data on losses from extreme events, and then you show an illustration from a GAO report that does NOT adjust for inflation!</p> <p>Recommendation: Remove the figure and substitute an analogous one from Changnon that is adjusted for inflation and you will see no major trend. As it now stands, the statement fails to meet the authors’ claim of representing the “the best available science” (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Michaels, Cato Institute and University of Virginia</p> | <p>Much of the data in the referenced Chagnon report is 13 years old and does not include all loss categories of interest, whereas the referenced chart has an additional decade of coverage and more comprehensive data. The abstract of the Chagnon actually identifies both demographics and “shifts in atmospheric variables” as driving factors.</p> <p>According to the GAO source document the data are adjusted using a “chainweighted gross domestic product price index to express dollar amounts in inflation-adjusted 2005 dollars.”</p> |
| P | Knappenberger | 51 | 2 | 1 | <p>Citation 27 is to Mills, Science, 2005. The Mills paper has come under intensive criticism, largely from Dr. Roger Pielke Jr—another expert in the field of disaster losses. Pielke Jr. published a response to the Mills paper in Science.</p> <p>It is inconceivable that the authors of the CCSP report don’t know of the Pielke Jr. criticisms (after all Evan Mills is listed as a CCSP author) and yet it is equally inconceivable that knowing of them, that absolutely no reference is made to them.</p> <p>The fact is, is that Pielke Jr. concluded “Presently, there is simply no scientific basis for claims that the escalating cost of disasters is the result of anything other than increasing societal vulnerability.” (Pielke Jr., Science, 2005). This is precisely the opposite of the CCSP conclusion. How can such criticism be completely ignored?</p> <p>Recommendation: Remove this sentence entirely. It is ill-founded and ill-justified. As it now stands, the statement fails to meet the authors’ claim of providing the “best available science” (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | <p>The referenced paper is a synthesis of a large literature, and also parallels conclusions from IPCC/TAR/WG2/Ch8 (which should also be cited at this juncture). The referenced criticism took the form of a brief letter from Pielke Jr. to <i>Science</i>, which was answered in detail in the same issue by Mills. It would be beneficial to cite this exchange of letters, and, space allowing, draw out the many factors not accounted for in simplified “normalization” procedures. Considerable effort has been made to normalize historic offices upward to account for factors such as inflation, but little has been done to quantify the countervailing factors of improved construction practices, early warning systems, and other adaptive responses that reduce losses.</p> <p>The referenced exchange of letters in Science has been cited.</p> |

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| P | Knappenberger | 51 | 2 | 2 | <p>There is a mixture of U.S. and world figures in this sentence describing weather-related losses. Citation 20 is to a Swiss Re publication and it's reference to flood losses applied to global totals, while the first half of the sentence refers to U.S. damages. This is a completely apples and oranges comparison. The appropriate reference to U.S. flood damages is Downton et al. (Downton, W.M., Miller, J.Z.B., Pielke Jr., R.A., 2005. Renalysis of U.S. National Weather Service Flood Loss Database. Natural Hazards Review, 6, 13-22), which shows in fact that flood damages, when properly adjusted for increases in U.S. wealth, show no trend (a slight, significantly insignificant downward trend, to be exact).</p> <p>Recommendation: Remove this misleading sentence and replace it with one which accurately reflects the appropriate science. As it now stands, the statement fails to meet the authors' claim of providing the "best available science" (p. 14) and of conveying "the most relevant" information possible (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | <p>Global numbers have meaning and value in the context of this section and the report in general, as the insurance industry and other parts of the economy and society are increasingly globalized. For example, many insurers domiciled in the U.S. do business globally and thereby experience weather-related exposures in multiple countries.</p> <p>Geographic differences are noted.</p> |
| P | Medlock | 51 | 5 | 4 | <p>sentence regarding increased losses were the 1993 Midwest Floods to recur should be updated to provide the local and regional costs associated with the 2008 Midwest Floods, even if preliminary.</p> <p>Medlock, ASFPM</p> | <p>Thank you. The suggested information does not provide a reference from a peer-reviewed paper, and we have declined to make the suggested changes to the text.</p> |
| P | Michaels | 51 | 5 | | <p>A sentence needs to be added to the effect that "premiums paid to the National Flood Insurance Program have been insufficient to cover losses." It's that simple. If people want to live in places where hurricanes can destroy their homes, then they need to pay appropriate insurance costs. No...instead we give out money to rebuild in the same vulnerable place! All of that is well and good, as long as premiums are high enough to permit this. Society does NOT owe everyone whose beach house is inundated. Insurance companies should do this, at a high premium.</p> <p>Michaels, Cato Institute and University of Virginia</p> | <p>Thank you. The existing wording seems to accomplish what you are suggesting, but further elaboration is not possible given space considerations. It is not this report's role to critique the merits of NFIP.</p> <p>More explicit reference is now made to the necessity of actuarial premiums, as well as adequate loss-prevention.</p> |
| P | Davis | 52 | | | <p>Bullet 1 Delete. The current, observed trend is toward fewer heat-related deaths despite increasing temperature and humidity, and cold weather is hardly related at all to mortality rates. Few people actually believe that the U.S. death rate will increase in the future because of "global warming," especially in light of the long-term trend toward fewer heat-related deaths and greater life expectancy. This report would be better served to simply admit to the established trends and focus more on impacts that are much more likely.</p> | <p>Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text.</p> |

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| | | | | | <p>Davis, R.E., P.C. Knappenberger, P.J. Michaels, and W.M. Novicoff (2004). Seasonality of Climate-human Mortality Relationships in US Cities and Impacts of Climate Change. <i>Climate Research</i>, 26, 61–76.</p> <p>Davis, R.E., P.C. Knappenberger, P.J. Michaels, and W.M. Novicoff (2003a). Changing Heat-related Mortality in the United States. <i>Environmental Health Perspectives</i>, 111, 1712-1718 (doi:10.1289/ehp.6336).</p> <p>Davis, R.E., P.C. Knappenberger, W.M. Novicoff and P.J. Michaels (2003b). Decadal changes in summer mortality in U.S. cities. <i>International Journal of Biometeorology</i>, 47, 166–175.</p> <p>Davis, R.E., P.C. Knappenberger, W.M. Novicoff, and P.J. Michaels (2002). Decadal Changes in Heat-related Human Mortality in the Eastern United States, <i>Climate Research</i>, 22, 175–184.</p> <p>Davis, University of Virginia</p> | |
| P | Davis | 52 | | | <p>Bullet 2</p> <p>While I agree with this point, it mistakenly leads people to believe that air quality is declining, when in most urban areas it has improved markedly over time. This is very clear on the EPA web site (http://www.epa.gov/airtrends/).</p> <p>Davis, University of Virginia</p> | Thank you. The suggestion has been considered, but the author team has decided to retain this as is. |
| P | Davis | 52 | | | <p>Bullet 3</p> <p>It can't possibly help the mental health of the population by writing scary, biased reports about global warming impacts that cherry-pick the literature and give the mistaken impression of impending disaster. If you really care about society's mental health, revise this report.</p> <p>Davis, University of Virginia</p> | Thank you. The comment has been considered, but is judged to contain no suggestion relevant to improvement of the scientific content of the USP report. |
| P | Knappenberger | 52 | | | <p>Bullet 1</p> <p>If someone is projecting increases in human heat-related mortality, then they are making bad predictions. Observed trends show that heat-related mortality is declining across the major cities of the U.S. once population changes are taken into effect heat (Davis et al., 2003, <i>International Journal of Biometeorology</i>; Davis et al., 2003, <i>Environmental Health Perspectives</i>). True, as the population increases and the elderly portion of the population increases, more people will die, but this is because of population changes, not climate changes.</p> <p>Recommendation: Remove this bullet as it relies on poor science and ignores established and proven trends. As it now stands, the statement fails to meet the authors' claim of providing the "best available science" (p. 14) and of conveying "the most relevant" information possible (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Knappenberger | 52 | | | <p>Bullet 2</p> <p>Reduced air quality? The EPA clearly demonstrates that air quality has been improving across the country as air pollution emissions have declined (U.S.</p> | Thank you. The suggestion has been considered, but the author team has decided to retain this as is. |

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| | | | | | <p>EPA, http://www.epa.gov/airtrends/sixpoll.html). Is there some reason to think that a changing climate is going to decrease air quality to a greater degree than direct emissions declines will improve it? Not according to your own cited sources (likely Huang et al., 2008, although this reference is not available for me to confirm this directly). The only decreases in air quality in future climate change projections assume that air pollution emissions will increase—something that is not happening and has not been happening for more than 30 years. Why the pessimism for the future. Is the Clean Air Act et al. expected to be overturned?</p> <p>Recommendation: Remove this bullet as it relies on poor science and ignores established and proven trends. As it now stands, the statement fails to meet the authors’ claim of providing the “best available science” (p. 14) and of conveying “the most relevant” information possible (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | |
| P | Knappenberger | 53 | 1 | | <p>If a warmer climate is so bad, then why are more and more Americans moving southward into Florida, the Gulf Coast, Texas, the desert Southwest and southern California as demonstrated by your map on page 44? Doesn’t this movement provide a direct test of your warming climate hypothesis? Have all these people suffered the innumerable woes from the “multiple pathways that lead to harmful exposures”? If so, please provide the documentation whereby America’s moving into warmer climates have suffered more than those who did not make such a move. If no such documentation exists, then remove this paragraph.</p> <p>Recommendation: Remove this paragraph or provide documentation as to how Americans in the countries warmer regions are less healthy than those in the colder regions. As it now stands, the paragraph fails to meet the authors’ claim of providing the “best available science” (p. 14) and of conveying “the most relevant” information possible (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | Thank you. The comment has been considered, but is judged to contain no suggestion relevant to improvement of the scientific content of the USP report. |
| P | Knappenberger | 53 | 2 | 1 | <p>This has nothing to do with climate change, but instead to global transportation systems and mobility.</p> <p>Recommendation: Remove this statement as it is immaterial.</p> <p>Knappenberger, New Hope Environmental Services</p> | Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re-examine the issue when the Second Draft is released for review. |
| P | Knappenberger | 54 | | | <p>Banner</p> <p>This statement is unsubstantiated by proper analysis and is misleading.</p> | Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer |

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| | | | | | <p>Recommendation: Remove this statement. It is misleading. As it now stands, the statement fails to meet the authors' claim of providing the "best available science" (p. 14) and of conveying "the most relevant" information possible (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | <p>pertinent to the document text.</p> |
| P | Knappenberger | 54 | 1 | | <p>Last two sentences: You are describing population changes (and health changes) here. These are NOT related to climate change. Sure, more people may die on extremely hot days because there are more people at risk, but, as demonstrated (Davis et al., 2003, International Journal of Biometeorology; Davis et al., 2003, Environmental Health Perspectives) the sensitivity of a standardized population to extreme heat is declining. Thus, if more people die in the future, current trends would suggest that they are doing so not because of climate change, but as a result of population changes. Not to recognize this fact, and make it clear to the readers is simply being either uninformed and/or dishonest.</p> <p>Recommendation: Make this point clear! As it now stands, the statement fails to meet the authors' claim of providing the "best available science" (p. 14) and of conveying "the most relevant" information possible (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | <p>Thank you. The text in question has undergone major revisions that we believe address the reviewer's concerns. The reviewer may re-examine the issue when the Second Draft is released for review.</p> |
| P | Davis | 54 | 3 | | <p>Delete this entire paragraph and the associated figure. This section is based on what I believe to be a seriously flawed study by Kalkstein et al. that appeared in the January, 2008 issue of the Bulletin of the American Meteorological Society. I served as a reviewer. The first version of the manuscript was rejected based upon my review and that of another reviewer. The second version was not significantly changed, and I again recommended rejection. Apparently the BAMS editors were so interested in publishing the piece that they removed me from the review cycle, and the revision was essentially published without addressing my serious concerns.</p> <p>Below, I share with you my original review and my comments on the revision. (NOTE: Reviewers original review of "The Development of analog European Heat Waves for U.S. Cities to Analyze Impacts on Heat-Related Mortality" by Kalkstein et al. is appended to comments. Review in electronic file.)</p> <p>Davis, University of Virginia</p> | <p>Thank you. The suggestion has been considered, but the author team has decided to retain this as is.</p> |

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| P | Knappenberger | 54 | 3 | | <p>The reference cited for this paragraph (citation 3 = Kalkstein et al., 2008, BAMS) produces no such analysis as described in this paragraph. Instead it (inadvisably and using poor methodology) attempts to estimate what the mortality would be like in 5 US cities if they experienced a heat wave of the character that hit Europe in 2003. Kalkstien et al. (2008) did not project future mortality in 21 cites from some global warming scenario.</p> <p>Recommendation: Remove this paragraph. As it now stands, the statement fails to meet the authors’ claim of providing the “best available science” (p. 14) and of conveying “the most relevant” information possible (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | |
| P | Knappenberger | 56 | 2 | | <p>First two paragraphs</p> <p>How can you have this two-paragraph discussion on the woes of ground level ozone and never mention that the trends on ground-level ozone concentrations are decreasing (U.S. EPA, http://www.epa.gov/airtrends/ozone.html)?! Why are you all being so elusive and unwilling to present relevant facts. It seems as if this report is more interested in pushing an agenda than it is in presenting the reader with an accurate review of the available scientific data.</p> <p>(Note: Figure – Ozone Air quality, 1980-2007, USEPA inserted here. Part of electronic file)</p> <p>or if you prefer,</p> <p>(Note: Figure – Caption below, inserted here. Part of electronic file)</p> <p>U.S. National 8-hour ozone air quality trend, 1997-2007, with and without adjustments for weather (source: US EPA, http://www.epa.gov/airtrends/weather.html)</p> <p>Recommendation: Tell the full truth and include a discussion about improving ozone air quality. As it now stands, the statement fails to meet the authors’ claim of providing the “best available science” (p. 14) and of conveying “the most relevant” information possible (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | <p>Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text.</p> |
| P | Knappenberger | 56 | 5 | | <p>Again, there is no discussion about how observed trends may help you make a determination as to which of the two scenarios is likely to be most correct (hint: the low emissions one).</p> <p>Recommendation: Add a discussion about observed ozone trends. As it now stands, the statement fails to meet the authors’ claim of providing the “best available</p> | <p>Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text.</p> |

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| | | | | | science” (p. 14) and of conveying “the most relevant” information possible (p. 14) and otherwise violates applicable objectivity requirements. Knappenberger, New Hope Environmental Services | |
| P | Sherwood | 57 | | | Box - Air Quality: Statement "These pollutants contribute to 8,800 deaths....in California" is unclear--is this the marginal increase in deaths and costs attributable to pollution, or simply the total costs of all health care of which air pollution might have caused a very small portion? This sentence should be reworded so its meaning is more clear. Likewise, the following sentence "...increasing by 75 to 85 percent..." is meaningless unless a date or CO2 level associated with this figure is given. Sherwood, Yale University | Thank you. The suggestion has been considered, but the author team has decided to retain this as is. |
| P | Colorado Water Conservation Board | 58 | | | It is too simplistic to simply state “wildfires are already increasing due to warming”. There are many issues at play, including questionable forest management practices, recent droughts (unrelated to warming), large population growth in arid regions, and encroachment into the urban-wildland interface. Also, it should be noted that post-wildfire conditions greatly increase the threat to flooding, including mudflows. In fact, in many western states, the most floodprone areas are not necessarily the classic riverine threats, but rather post-wildfire floods downstream of burn scars. Houck, P.E., CFM; ASFPM, Colorado Water Conservation Board | Thank you. The suggestion has been considered, but the author team has decided to retain this as is. |
| P | Knappenberger | 58 | 1 | 1 | I don’t understand this projection. Are you taking into account population changes or not? If not, then the statement is a reflection of population and not weather. If population changes are accounted for, then it seems as if you are turning the clock back many, many years and suggesting that instead of improving technologies saving lives—such as doppler radar, heat watch/warning systems, improving technologies employed by the National Hurricane Center, air pollution awareness systems, etc.—will start to become ineffective and the long established trends towards fewer people dying from extreme weather events (in some cases even despite rising population numbers) will turn around. Recommendation: Clarify whether the projected increase in injury, illness and death takes into account a growing population. Also explain how the agencies such as the NWS and the NHC will begin to fail in one of their main purposes—to help protect lives. As it now stands, the statement fails to meet the authors’ claim of conveying “the most relevant” information possible (p. 14) and otherwise violates applicable objectivity requirements. Knappenberger, New Hope Environmental Services | Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re-examine the issue when the Second Draft is released for review. |

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| P | Sherwood | 58 | 1 | 6 | Beginning with "Of course..." makes the sentence sound snide; I suggest changing to "Since we have already...Rita, we must conclude..." Sherwood, Yale University | Thank you. This sentence has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Knappenberger | 58 | 2 | 1 | I don't understand this sentence. More than "double the average number of lives lost...over the previous 65 years"? The U.S. doesn't average 1,000 deaths from hurricanes a year. Do you mean double the TOTAL number of lives lost to hurricanes in the past 65 years? If so, then things are still off. According to the NHC, there were 2,464 lives lost to hurricanes in the U.S. in the 65-year period from 1940-2004 (http://www.nhc.noaa.gov/Deadliest_Costliest.shtml?). This averages to 38 deaths per year. The number of lives lost to Katrina is likely at least several hundred less than the total of the previous 65 years. If you want to keep the sum under 1,000 deaths, then you need to go back only 35 years—the time since Camille. Recommendation: Clarify exactly what you really mean to say here and double check your hurricane death numbers. This is very sloppy. As it now stands, the statement fails to meet the authors' claim of providing the "best available science" (p. 14) and of conveying "the most relevant" information possible (p. 14) and otherwise violates applicable objectivity requirements. Knappenberger, New Hope Environmental Services | Thank you. The suggestion has been considered, but the author team has decided to retain this as is. |
| P | Knappenberger | 58 | 3 | 2 | We discussed the discrepancy between these numbers and our findings in a previous comment. Recommendation: Rectify these numbers with our findings (Michaels, et al., 2004, Trends in precipitation on the wettest days of the year across the contiguous USA, International Journal of Climatology, 24, 1873-1882.). It is misleading unless further clarified. As it now stands, the statement fails to meet the authors' claim of providing the "best available science" (p. 14) and of conveying "the most relevant" information possible (p. 14) and otherwise violates applicable objectivity requirements. Knappenberger, New Hope Environmental Services | Thank you. The suggestion has been considered, but the author team has decided to retain this as is. |
| P | Knappenberger | 59 | | | Box Come on. This is truly bad. How can you blame climate change for the spread of West Nile Virus from New York City to the four corners of the country in just 5 years? What is the range of climate that it now resides in? Exactly how much anthropogenic climate change occurred over that 5-year period? I seem to recall | Thank you. The suggestion has been considered, but the author team has decided to retain this as is. |

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| | | | | | <p>swatting plenty of mosquitoes prior to 1999. And New York City is hardly the warmest place in the U.S. It seems odd that climate change is causing a disease to spread southward.</p> <p>The vector for West Nile is mosquitoes and wherever there is a suitable host mosquito population, an outpost for West Nile virus can be established. And it is not just one mosquito species that is involved. Instead, the disease has been isolated in over 40 mosquito species found throughout the United States. So the simplistic argument that climate change is allowing a West Nile carrying mosquito species to move across the United States is simply wrong. The already-resident mosquito populations—existing across the huge range of climates in the U.S.—are appropriate hosts for the West Nile virus. Once it was introduced, it rapidly took hold—because of the existing mosquito populations, not climate change.</p> <p>Recommendation: Remove this entire box. It is wrong and embarrassing. As it now stands, this information fails to meet the authors' claim of providing the "best available science" (p. 14) and of conveying "the most relevant" information possible (p. 14) and otherwise violates applicable objectivity requirements. Knappenberger, New Hope Environmental Services</p> | |
| P | Sherwood | 59 | 1 | | <p>Bullet 3: should say, "Climate change MAY affect the abundance..." Past changes in these pests can be attributed to non-climatic human impacts, and there is no consensus that future climate changes will have an important effect either. Sherwood, Yale University</p> | Thank you. The suggestion has been considered, but the author team has decided to retain this as is. |
| P | Knappenberger | 60 | | | <p>You have got to be kidding me. This is a Chapter on Human Health and instead of focusing on the benefits of rising levels of carbon dioxide on food crop production (better yield, better water use efficiency, better pollution tolerance, and on and on), you instead decide to focus on CO2's benefits on ragweed and poison ivy! There is not a single reference to anything positive arising from plants growing better. This single page epitomizes the problems of this entire report. There is not the slightest notion of trying to present to true state of scientific knowledge. Instead the authors seem set on dreaming up a litany of pessimistic projections and negative impacts. The report is an insult to everyone who reads it.</p> <p>Recommendation: Replace this page with one discussing the positive effects of CO2</p> | Thank you. The comment has been considered, but is judged to contain no suggestion relevant to improvement of the scientific content of the USP report. |

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| | | | | | <p>on plants and how they interact positively with humans. It is not really that hard to find examples from the monumental literature on the subject. In fact, it is much harder to find the few negative impacts to cherry pick. As it now stands, the statement fails to meet the authors' claim of providing the "best available science" (p. 14) and of conveying "the most relevant" information possible (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | |
| P | Sherwood | 60 | | | <p>Pollen Picture: pollen picture left me totally confused. I can't tell what I'm looking at. Can you find another picture to put here, maybe of a ragweed blossom?</p> <p>Sherwood, Yale University</p> | Thank you. This graphic has been removed. |
| P | Sherwood | 66 | 5 | | <p>last paragraph and first paragraph of next page: these paragraphs do not give any number for how much the efficiency is reduced per degree of warming, yet provide other figures (how many kWh/yr 1% of US consumption is) which are irrelevant when that key figure is not known. Either provide the important numbers or abandon the pretense of being quantitative.</p> <p>Sherwood, Yale University</p> | Thank you. The text repeats content in SAP 4.5, which was widely reviewed without objection. |
| P | Michaels | 74 | 4 | 3 | <p>The midrange emissions scenario sea-level rise in the IPCC AR4 is 8-19 inches, with a mean of 13.5. One presumes CCSP is using this median, too. (If not, they need to say which emissions scenario they are using). At any rate, this leaves slightly less than 3 feet as a result of subsidence. So, barring ANY climate change it would appear that the roads/railroads would go under water about 25 years later simply because of local geology. Ivins, in Geophysical Research Letters calculated subsidence on the central Gulf Coast at between .04 and 0.3 inches per year.</p> <p>Recommendation: You need to note that this is and WILL BE the major cause of sea-level rise on the Gulf Coast in the next 100 years, and that adaptation to subsidence is the same as adaptation to climate-changed induce rising sea-levels.</p> <p>Modify Key Finding 5 to indicate that there is a large component of sea –level rise on the Atlantic and Gulf Coasts that is a result of geological, not climatic, processes, and that these will continue.</p> <p>As it now stands, the statement fails to meet the authors' claim of representing the "the best available science" (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Michaels, Cato Institute and University of Virginia</p> | Thank you. We appreciate the comment but the text is not misleading or incorrect in any way. The amount of sea level rise due to subsidence varies with the location in the Gulf Coast. The share also depends on how much eustatic sea level rise there is over the next 100 years. For areas of the Gulf Coast with low subsidence rates and under a high eustatic sea level rise, it is not true that subsidence is the predominant cause. Nonetheless, the text specifically addresses the role of land subsidence in the rate of "relative sea level rise" on the Gulf Coast. We have included specific reference to subsidence in the call-out box as well. |

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| P | Michaels | 75 | | | <p>Box</p> <p>In the IPCC AR4, the greatest projected rise is in A1F1 (“fossil intensive”) scenario is slightly less than two feet.</p> <p>Recommendation: CCSP needs to state here why their estimate of maximum rise is so much higher than IPCC’s (or, rather, what specifically is wrong with the IPCC’s estimates and how did CCSP decide to use a different figure). As it now stands, the statement fails to meet the authors’ claim of representing the “the best available science” (p. 14) and of conveying “the most relevant and up-to-date information possible” and otherwise violates applicable objectivity requirements.</p> <p>Michaels, Cato Institute and University of Virginia</p> | <p>Thank you, but the text is not misleading or incorrect in any way. SAP 4.7 used tide gauge data to determine subsidence rates and two models (Sea Level Rise Rectification Program and CoastClim), which incorporate IPCC data, to estimate relative sea level rise. The difference is due to the incorporation of subsidence rates in different parts of the Gulf Coast. (see SAP 4.7, Chapter 3 for further details).</p> |
| P | Michaels | 76 | 4 | | <p>And first paragraph, page 77</p> <p>No where here is it stated that the vast majority of the overwash is a result of land subsidence. This is extremely and purposefully misleading to the reader.</p> <p>Recommendation: Please correct it this misleading statement. And again modify Key Finding 5. As it now stands, the statement fails to meet the authors’ claim of representing the “the best available science” (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Michaels, Cato Institute and University of Virginia</p> | <p>Thank you, but the text is not misleading or incorrect in any way. The amount of sea-level rise due to subsidence varies with the location in the gulf coast. The share also depends on how much eustatic sea-level rise there is over the next 100 years. For areas of the gulf with low subsidence rates and under a high eustatic sea-level rise, it is not true that subsidence is the predominant cause. Nonetheless, the text indicates the importance of subsidence in sea-level rise and specifically mentions this as a cause under the 4th paragraph of the sea-level rise section and it has been added to the call out box on the Gulf Coast.</p> |
| P | Medlock | 77 | 1 | | <p>The first partial paragraph needs to discuss the issue of aging transportation infrastructure, especially bridges and roads, and resulting increased vulnerability to damage or destruction in even moderate floods that the infrastructure may withstand if properly designed and maintained. Although discussed on p. 80 in the context of hurricanes, the issue warrants discussion here, as well.</p> <p>Medlock, ASFPM</p> | <p>Accepted and thank you.</p> |
| P | Michaels | 79 | | | <p>Citation 19</p> <p>Citation 19 is “Tom Karl and D. Anderson: Emerging issues in abrupt climate change, Internal Briefing.” Personally, I’ve never heard of the refereed journal “Internal Briefing”, but maybe that meets CCSP’s standards given on page 14.</p> <p>Recommendation: Suggest that, in an attempt to maintain credibility, that references like this (and the text they support) be removed</p> <p>Michaels, Cato Institute and University of Virginia</p> | <p>A citation from a peer-reviewed source has been substituted. Thank you for the comment.</p> |
| P | Michaels | 79 | 1 | 1 | <p>There’s no trend at all in the level of Lake Ontario from the beginning of the Canadian record in 1918 (http://www.waterlevels.gc.ca/C&A/netgraphs_e.html).</p> | <p>Thank you. We have deleted the text in question.</p> |

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| | | | | | Recommendation: Please note this in the text. Michaels, Cato Institute and University of Virginia | |
| P | Michaels | 79 | 2 | 3 | See my “General Comment on Temperature and Precipitation Maps for the U.S.”. There, I requested a graphic showing the changes projected by each of the 15 or 16 models. Then this sentence can be corrected to say “If low water levels....conditions predicted by xx% of our models,” then there is something to this statement Michaels, Cato Institute and University of Virginia | Thank you. The context of the existing sentence is clear. Editorial changes are not necessary. |
| P | Michaels | 79 | 6 | | What’s missing here is the fact that, on average, the U.S. is becoming wetter as precipitation minus potential evapotranspiration shows a significant increase as both the U.S. and the planet warmed. Recommendation: This needs to be mentioned here—in other words that what IS happening is going to have to reverse itself. Add to Key Finding 1.2 that, as a whole, the U.S. has become wetter. As it now stands, the statement fails to meet the authors’ claim of representing the “the best available science” (p. 14) and otherwise violates applicable objectivity requirements. Michaels, Cato Institute and University of Virginia | Thank you. We feel it is more meaningful to consider drought trends and projections at a regional scale. According to SAP 3.3 on Weather and Climate Extreme, it is likely that droughts will become more severe in the southwestern U.S. and parts of Mexico in part because precipitation in the winter rainy season is projected to decrease. In other places where the increase in precipitation does not keep pace with increased evaporation, droughts are also likely to become more severe. We do not feel the text misrepresents the data in any way. |
| P | Michaels | 81 | 1 | 1 | Hmm...the Galveston Hurricane in 1900 killed 8000, and according to Pielke Jr. et al., (2008, Natural Hazards Review), and the costliest storm was the 1926 Great Miami Hurricane, at 140-157\$ billion in normalized damage. Pielke Jr has Katrina at 81\$ billion. In any case, Katrina was neither the deadliest nor the costliest. Recommendation: Please make the text accurate here. What really surprises me about this one is that many of the CCSP people must know of the 1926 hurricane and 1900 Galveston. How does stuff like this get through? As it now stands, the statement fails to meet the authors’ claim of representing the “the best available science” (p. 14) and of conveying “the most relevant and up-to-date information possible” and otherwise violates applicable objectivity requirements. Michaels, Cato Institute and University of Virginia | Thank you. We have corrected the text to reflect these facts. |
| P | Michaels | 82 | 2 | | This is the typical metric of this report. “Something good might happen, but there is also something bad to cancel the good”. In this case you correctly state that the Arctic Passage will be navigable, and then follow that with a statement to the effect that because ice varies from year to year, shippers will have “higher costs”. If the cost to ship in the Arctic is greater than simply staying out, shippers will stay | Thank you. The text in question regarding shipping costs has been deleted. |

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| | | | | | <p>away. Or do you think they are just stupid?</p> <p>Recommendation: Change the sentence to something like—“variable conditions in coming decades make it difficult to predict when this will become cost-effective”.</p> <p>Michaels, Cato Institute and University of Virginia</p> | |
| P | Center for Biological Diversity | 83 | 1 | | <p>Cite Arctic Climate Impact Assessment and Trenberth (2007) for opening sentences:</p> <p>Trenberth, K. E., P. D. Jones, P. Ambenje, R. Bogariu, D. Easterling, A. Klein Tank, D. Parker, F. Rahimzadeh, J. A. Renwick, M. Rusticucci, B. Soden, and P. Zhai. 2007. 2007: Observations: Surface and Atmospheric Climate Change. in S. Solomon, D. Qin, M. Manning, Z. Chen, M. Marquis, K. B. Averyt, M. Tignor, and H. L. Miller, editors. Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, United Kingdom, and New York, NY, USA.</p> <p>Center for Biological Diversity</p> | Accepted and thank you. |
| P | Lins & Cohn | 84 | | | <p>Page 84-93</p> <p>This entire section is an excessively simplistic and selective exposition of hydrologic and water resources concepts and conditions. In attempting to provide the reader with primer-like descriptions having intuitive appeal, it misrepresents the complexity of the hydrological systems and the sophistication and robustness of the engineering practices that underpin water resources management. We suspect that the fundamental weakness of this section stems from its attempt to extrapolate relatively simple interactions within a natural environment to the extensively and intensively engineered environment of the Nation’s water resources system. This leads to the inclusion of numerous statements and notions that are either demonstrably false, or that suggest a level of confidence that is inappropriate given the fundamental uncertainty in the underlying science. Specific examples of this general criticism follow.</p> <p>Lins & Cohn</p> | Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Lins & Cohn | 84 | | | <p>Bullet 3</p> <p>Change bullet from “Climate change will add yet another burden to already stressed water systems.” to “Water systems, particularly those already stressed, will</p> | Thank you. The suggestion has been considered, but the author team has decided to retain this as is. |

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| | | | | | experience further pressures with adverse changes in climate.” Lins & Cohn | |
| P | Lins & Cohn | 85 | | | Figure Figure should be entitled “Potential adverse impacts of climate change.” Lins & Cohn | Thank you. The suggestion has been considered, but the author team has decided to use a different title. |
| P | Lins & Cohn | 85 | | 9 | The word “pressurize” should be deleted from the sentence “A great deal of energy is used to pump, pressurize, treat, transport, and heat water” because pressurizing water involves essentially no energy (water is essentially incompressible). Lins & Cohn | Accepted and thank you. |
| P | Michaels | 85 | | | Picture UNLESS you can demonstrate that the suite of models used are generating a statistically-significant change in rainfall (less in the west and more in the east), this picture must be removed. See comment above on presenting the entire suite of the models. I do not have a clue whether or not the model average differs significantly from zero, but you need to demonstrate that it does before you can use this picture. Recommendation: Remove picture unless it can be justified. Michaels, Cato Institute and University of Virginia | Thank you. We are not sure what picture you are referring to here. |
| P | Lins & Cohn | 85 | 1 | 1 | First sentence should be deleted . . . one could legitimately argue that nothing is more essential to life than DNA! Moreover, the paragraph reads better by starting with the second sentence. Lins & Cohn | Accepted and thank you. |
| P | Lins & Cohn | 86 | | 31 | The word “causing” should be changed to “cause” and “light events” to “light rain” Lins & Cohn | Thank you. The suggestion has been considered and some changes have been made. |
| P | Michaels | 86 | | | Needed insert on pp 86-87. Comment: The reader is certainly left with the impression that most of these observations are caused by anthropogenerated climate change from greenhouse gases. The primary reference is often CCSP SAP4.3. Regarding this, it says, “Most of the studies reviewed in this chapter to not incorporate methods of trend attribution, and conclusions must be qualified to this effect”. Recommendation: Change that into something the general reader can understand and insert it somewhere in these pages. Michaels, Cato Institute and University of Virginia | Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re-examine the issue when the Second Draft is released for review. |
| P | URS | 86 | 2 | | Provide better clarification on paragraph 2, as this is good information but the wording makes it difficult to understand this important information. URS | Thank you. We have revised this paragraph. |

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| P | Lins & Cohn | 87 | | | <p>Table-Upper Left</p> <p>Regarding the entry for “Energy Production and Use” what evidence exists suggesting that increased water temperatures will lead to reductions in fossil fuel and nuclear power generation. Most reputable studies of changes in water temperature have documented that reduction in riparian vegetation is the major cause of water temperature increases, not increases in air temperature.</p> <p>Lins & Cohn</p> | Thank you. This table has been revised and referenced. |
| P | Lins & Cohn | 87 | | | <p>Table-Bottom Right</p> <p>The entry for “Streamflow” currently states that it is increasing in “Most of East.” This is an incomplete characterization of conditions across the country. Lins and Slack, Physical Geography, 2005, document that low to moderate streamflows have increased in all 18 water resources regions of the conterminous United States except California and the Pacific Northwest. Moreover, there has been no documented increase in annual maximum flows in any region of the Nation. This supports the argument made two comments ago related to the use of the term “heavy downpours.” Whatever change there has been in the higher percentiles of daily precipitation, they have only been large enough to increase low to moderate streamflows. As such, the term “heavy downpours,” based on the observed record in streamflow, appears to be a misnomer and should not under any circumstances be used in such a way as to imply an increase in (or a potential future increase in) flooding and flood-related processes. There is no evidence to support this implication. Indeed, by any measure, the observed increases in precipitation have been good news for U.S. water resources.</p> <p>Lins & Cohn</p> | Thank you. The suggestion has been considered, but the author team has decided to retain this as is. |
| P | Michaels | 87 | | | <p>Box-Top Left</p> <p>EVERYTHING is bad!? Why couldn’t increased precipitation and runoff result in greater capture of water (maybe we might even build a new dam or two, or raise others?). More water then becomes available for irrigated agriculture. How about more warm-water fish (Greenlanders were happy to see the return of the cod during the warming of the early 20th century)? Tables like this just reveal the profound biases in this report.</p> <p>Recommendation: Changes the column heading in the table from “Impacts” to “Negative Impacts” and add an entirely new column with the heading “Positive Impacts” and populate it accordingly. You must be able to think up a few. No? If this remains as is, I suspect there will be a lot of public attack on CCSP’s credibility.</p> | Thank you. This table has been revised and referenced. |

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| | | | | | <p>Commenter: Patrick J. Michaels, Cato Institute and University of Virginia Specific comment 124. Page 87, first paragraph. “Over the last 50 years there have been widespread temperature-related reductions in snowpack in the West, with the largest reductions occurring in lower elevation mountains in the Pacific Northwest...” Comment: This is an old story. Starting in 1950 is starting at a high point in the snowpack. Records that go back into the early 20th century show little if any trend (Oregon Climate Service; National Water and Climate Center, USDA), as shown below (Figures included as noted. Part of electronic file) Recommendation: I suggest you modify text to say “a more limited set of records going back to the early 20th century indicates no overall trend in snowpack, as the mid-century appears to be a high point in these histories”, and that you show one (or more) of the figures supplied above. These historical records invalidate Key Finding 6.1. Modify it to state that snowpack has returned to values that were observed in the early 20th century, before substantial emissions of heat-trapping gases. As it now stands, the statement fails to meet the authors’ claim of representing the “the best available science” (p. 14) and otherwise violates applicable objectivity requirements. Michaels, Cato Institute and University of Virginia</p> | |
| P | Lins & Cohn | 88 | | 9 | <p>The word “fish” is misspelled “fishe.” Lins & Cohn</p> | Corrected. Thank you. |
| P | Lins & Cohn | 88 | | 11 | <p>Change “Many forms of water pollution including sediments and thermal pollution will be made worse by observed” to “Many water quality constituents including sediments and water temperature are affected, both positively and negatively, by observed” Lins & Cohn</p> | Thank you. The suggestion has been considered, but the author team has decided to retain this as is. |
| P | URS | 89 | 1 | | <p>provide more discussion on the “natural beneficial uses of wetlands.” URS</p> | Thank you. We agree the issue is important; however, we chose to highlight and discuss it elsewhere in the report. |
| P | Keillor and Pogue | 90 | 2 | | <p>Mention the regions where rapid or major population growth is expected to 2025...not just the region with the highest expected rate of growth. Is major population growth expected to continue in coastal areas? Keillor and Pogue, ASFPM</p> | Thank you. Population issues are discussed in other parts of the revised document. |
| P | URS | 90 | 2 | | <p>Mention the regions where rapid or major population growth is expected out to 2025...not just the region with the highest expected rate of growth. Is major</p> | Thank you. Population issues are discussed in other parts of the revised document. |

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| | | | | | <p>population growth expected to continue in coastal areas? What about the arid regions in the west and southwest?</p> <p>URS</p> | |
| P | URS | 90 | 4 | | <p>under “Existing Water Disputes throughout the Country,” paragraph 1, include the dispute between New Mexico and Texas on ownership of the aquifers for water usage. Water rights will increasingly become a major legal issue.</p> <p>URS</p> | <p>Thank you. Space limitations preclude the additional of all suggested comments.</p> |
| P | Lins & Cohn | 92 | | 1 | <p>(and the entire section)</p> <p>"Water planning has historically been based on the idea that supply and demand would fluctuate within an unchanging envelope of climate variability established by stream gauges and other data collected during the century. "</p> <p>This statement (indeed, the entire section) mischaracterizes the practice of water resources planning. In fact, water managers know to expect that over typical planning horizons -- on the order of decades -- demand for water will vary enormously in unexpected ways as populations grow and migrate, as water-related technology develops, and as water-use practices and economies evolve. For example, irrigation practices changed dramatically during the 19th and 20th centuries, and have radically altered water use in the West.</p> <p>On the supply front, since Hurst [1950] tried to develop estimates of Nile River flows, it has been recognized that climate variability occurs on essentially all time scales, and that even long records of streamflow do not provide a satisfactory characterization of hydrological systems. In addition to natural variability, land-use changes (for example removal of forests), typically increase (or decrease) average discharge. As every hydrology textbook notes, the question is not whether the climate system is stationary -- it is not -- but whether from an operation perspective we can derive useful information from consideration of the past (while, as always, maintaining awareness of how the future will likely differ from the past).</p> <p>As a result, predictions of future water demand and future water supply have historically been notoriously inaccurate. Water resource planners are aware of this; the magnitude of changes expected to be associated with anthropogenic climate change do not present a fundamentally new challenge when considered in the context of water resources planning. Planners have always had to develop robust plans that can accommodate unexpected change. Climate change will add to the uncertainty, but it is not fundamentally new.</p> <p>In summary, it is very peculiar to suggest that water resource planning has ever relied on an assumption that "supply and demand would fluctuate within an unchanging envelope of climate variability..." More to the point, in the absence of demonstrable evidence showing that current practices are responsible for water system failures (to supply water, to flood risk mitigation, etc.) there is no compelling case for arguing that current practices are “no longer appropriate for many aspects of water planning” (lines 11-12). This entire section highlights a serious lack of understanding within the climate science community of the robust engineering practices employed</p> | <p>Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text.</p> |

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| | | | | | by the water resources planning and management community. Lins & Cohn | |
| P | Keillor and Pogue | 92 | 1 | 15 | The reference to “new methods for incorporating climate change impacts and the resulting additional uncertainty” ...”well developed in academic case studies”.....refers to what aspects of water planning? I’m not aware of such accomplishments. The profoundly important statement at the head of this page poses a challenge to all who engage in water planning (including academics): “The past century is no longer a reasonable guide to the future for water management.” We suggest adding an endnote to direct readers to the cited academic case studies and experimental methods. Keillor and Medlock, ASFPM | Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | URS | 92 | 2 | | include the “ecosystem” and “water rights” that will be stressed by the competition for limited water supply. URS | Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re-examine the issue when the Second Draft is released for review. |
| P | URS | 92 | 2 | | not clear on what is meant by “potential adaptations are limited.” URS | Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re-examine the issue when the Second Draft is released for review. |
| P | Keillor | 92 | 3 | | An added bullet in the list of barriers to changes in water management that account for climate change is the lack of regional climate models (regional atmospheric circulation models) to interface with global models and provide a credible indication of anticipated climate change at the regional level. Reference the mention of this issue in the later section; Pathways to Improved Decision Making. Keillor, ASFPM | Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re-examine the issue when the Second Draft is released for review. |
| P | Hagen | 94 | 1 | | Bullet 1 Change to: “Crops show mixed responses to carbon dioxide and warming, increasing biomass productivity while possibly reducing grain yields.” Hagen, AcrossTech | Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re-examine the issue when the Second Draft is released for review. |
| P | Hagen | 95 | 1 | | Diversity has strongly declined over the last generation with the increase in monocrops. It can no longer be called “Extremely diverse.” Change to: “Agriculture in the United States is very diverse and...” Hagen, AcrossTech | Thank you. The suggestion has been considered, but the author team has decided to retain this as is. |
| P | Hagen | 96 | | 7 | Change to: “Rising populations need more food. Higher carbon dioxide levels caused 6% more global biomass over 17 years. It makes some plants more water-use-efficient, meaning they produce more plant material, such as grain, on less water4. The “medieval warming” increased food production while the “little ice | Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |

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| | | | | | <p>age” reduced it. However, some plants may produce proportionally less protein.” Cite: Climate-Driven Increases in Global Terrestrial Net Primary Production from 1982 to 1999 Ramakrishna R. Nemani,1*{dagger} Charles D. Keeling,2 Hirofumi Hashimoto,1,3 William M. Jolly,1 Stephen C. Piper,2 Compton J. Tucker,4 Ranga B. Myneni,5 Steven W. Running1 Science 6 June 2003: Vol. 300. no. 5625, pp. 1560 - 1563 Note: More food for rising populations is a critical context that should be mentioned as well as experience from historic climate change. Hagen, AcrossTech</p> | |
| P | Hagen | 96 | | 23 | <p>Change to: “If water supply variability increases it will affect plant growth and may reduce yields.” Hagen, AcrossTech</p> | Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Hagen | 96 | | 25 | <p>Insert: “Optimum latitudes for cropping regimes will move poleward (or towards the equator) as temperatures increase (or decrease).” (Note: The warmer vs cooler discussion is superficial, ignoring optimum latitude movement.) Hagen, AcrossTech</p> | Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Michaels | 96 | | | <p>Figures on Corn and Soybean There has to be something wrong here. The reproductive optimum for corn is given as 68 degrees and the vegetative at 84. But, in fact, the vegetative state is before reproduction. The last I heard, in the central part of its range, corn grows vegetatively through roughly the first week in July, and then tassels out in early or mid July (depending upon location). If the reproductive optimum is below the vegetative optimum, then the reproductive optimum is dramatically exceeded every year. Figure was obviously labeled by someone who has never lived near a cornfield. Recommendation: Change the figures so that they are labeled correctly. Also, what temperature does the x-axis refer to? Mean daily? Weekly? High temperature? Michaels, Cato Institute and University of Virginia</p> | Thank you. This section, including figure, has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Michaels | 96 | | | <p>Figures on Corn and Soybean I am assuming that you have labeled things wrong (see last comment), so, let’s just say that the curve on the right is the reproductive optimum. Note that for corn, my straightedge has it around 84 degrees. Then (see comment 129) CCSP says that corn yields will flatten out because the optimum will be exceeded. Is this such a bad thing? Moving whatever temperature this is (see last comment) up</p> | Thank you. This section, including figures, has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |

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| | | | | | <p>six degrees puts the temperature at the optimum for soybeans. Hmm...soybeans require less nitrogen fertilizer (being legumes) than corn...they tend to command about 2-3 times more per bushel in price, and the yields are about one third that of corn. Sounds like more protein (beans vs. corn) to me. CCSP on page 105 says changing species is “high-risk”. Not true, it’s what has been done throughout agricultural history. The soybean was virtually nonexistent in the US in the 1930s. Was the changeover of some corn land to soybeans in succeeding decades “high risk”?</p> <p>Recommendation: Modify text where appropriate in this chapter (there are many places) to indicate that agriculturalists will generally adapt their practices as they have in the past. A transition from corn to soybeans in the central part of the corn belt can accommodate several degrees and a transition from soybeans to grain sorghum allows for several more. As it now stands, the statement fails to meet the authors’ claim of representing the “the best available science” (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Michaels, Cato Institute and University of Virginia</p> | |
| P | Hagen | 96 | 1 | 3 | <p>“Responses in a changing climate reflect the interplay among three factors: changing temperatures . . .”</p> <p>Logically, if “changing” is used for climate and water, it must also be used for temperature. E.g., temperatures have been level or declining since 1998.</p> <p>Hagen, AcrossTech</p> | Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Michaels | 97 | 2 | 1 | <p>Wait a minute. Growing seasons are lengthening. That’s the time between the last and first frosts. Further, there’s no evidence that there is any change in the distribution of the relationship between temperature and last frost in the spring. CCSP is implying that this has happened—that it is warming the date of last frost has not adjusted accordingly.</p> <p>Recommendation: Please cite a reference and show a graphic proving that indeed this phase shift is occurring, or, failing that, remove the entire paragraph. As it now stands, the statement fails to meet the authors’ claim of representing the “the best available science” (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Michaels, Cato Institute and University of Virginia</p> | Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Hagen | 98 | | 34 | <p>Change to: “While models predict increases in drought frequency and severity with higher greenhouse emissions, they are not validated with some projections</p> | Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer |

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| | | | | | contrary to historic trends.” 19 Hagen, AcrossTech | pertinent to the document text. |
| P | Hagen | 98 | | | Note: Predictions of Greenhouse Climate Models in Australia give trends opposite to historic drought records and cannot be used to reliably predict droughts. Cite: “Tests of Regional Climate Model Validity in the Drought Exceptional Circumstances Report,” David RB Stockwell, August 5, 2008, Niche Modeling (http://landshape.org/enm) http://landshape.org/stats/tests-of-regional-climate-model-validity-in-the-drought-exceptional-circumstances-report/ “In a statistical re-analysis of the data from the Drought Exceptional Circumstances Report, all climate models failed standard internal validation tests for regional droughted area in Australia over the last century. The most worrying failure was that simulations showed increases in droughted area over the last century in all regions, while the observed trends in drought decreased in five of the seven regions identified in the CSIRO/Bureau of Meteorology report. Therefore there is no credible basis for the claims of increasing frequency of Exceptional Circumstances declarations made in the report. These results are consistent with other studies finding lack of adequate validation in global warming effects modeling, and lack of skill of climate models at the regional scale.” Hagen, AcrossTech | Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Michaels | 98 | | 5 | Figure Caption Funny. The range of temperatures in which corn is grown is enormous. But, more important, it is really difficult to believe that there will not be a tremendous economic incentive to genetically modify corn in fashions that will make it more water-efficient and less sensitive to very high temperatures. The relatively constant rise in yields shown in this figure has been predicted to stop for at least 40 years now by figures such as Lester Brown and Paul Ehrlich. By saying this, CCSP throws in with that non-credible crew. The trend continues upwards because of incentives to produce more which are satisfied by different varieties, nitrogen use, changes in tillage practices, etc...it strains the imagination to believe that other such technological improvements will suddenly stop because of global warming. Recommendation: Remove the sentence. As it now stands, the statement fails to meet the authors’ claim of representing the “the best available science” (p. 14) | Thank you. This section, including figures, has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |

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| | | | | | and otherwise violates applicable objectivity requirements. Michaels, Cato Institute and University of Virginia | |
| P | Michaels | 98 | | 3 | Figure Caption There is NO evidence for this occurring in recent years (based upon national average yields), despite what CCSP indicates is happening on page 87, i.e., lengthened drought, longer time between rainfall events, and increased heavy rain frequency. So if there is no evidence for increased variability given what CCSP says is already happening, how can you say it will occur in the future as these things continue to happen? Recommendation: Change text to acknowledge that the variation in yields has remained constant despite all the climate changes noted in the Report. As it now stands, the statement fails to meet the authors’ claim of representing the “the best available science” (p. 14) and otherwise violates applicable objectivity requirements. Michaels, Cato Institute and University of Virginia | Thank you. This section, including figures, has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Hagen | 104 | | 11 | Change to: “The arid region of the American Southwest is projected to become drier. However, models are not validated, and give conflicting results.” See: “Tests of Regional Climate Model Validity in the Drought Exceptional Circumstances Report,” David RB Stock well, August 5, 2008, Niche Modeling (http://landshape.org/enm) Hagen, AcrossTech | Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Frumhoff | 104 | 1 | | Para 1-4 It is confusing to see a discussion of desertification under a section header on forests and carbon storage. Suggest to reorganize this and integrate the forest and carbon storage discussion with other, more relevant information on wildfire (Page 103). The statement that “the challenge of increasing this sink is very large” – is misplaced. Unless placed in a context of a discussion of the collective challenges and opportunities to reduce net US emissions, this discussion is quite misleading. Strongly suggest to either delete the discussion of scaling up forest carbon storage (as not specifically linked to the overall focus on climate change impacts) or expand (e.g. to discuss more broadly the role of US forests in climate mitigation) and appropriately qualify. Frumhoff, Union of Concerned Scientists | Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Kruk | 107 | | | Banner: very top lists the contributions to the chapter, including CCSP SAP 4.2 and 4.4. However, CCSP SAP 4.2 and SAP 4.4 are not listed in the References section on | Thank you. The references have been updated. |

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| | | | | | pages 191-192. Suggestion: remove CCSP SAP 4.2 and 4.4 labels (icons) from top of page 107. Kruk, NCDC | |
| P | Kruk | 107 | 3 | | This is a short discussion on how forests use CO2. Another sentence might be needed to discuss what happens to the extra CO2 that is apparently not being used to produce new wood. Essentially, answer the question “what happens to the extra CO2 that isn’t being used for growth?” Are we talking about carbon sequestration? Some answers may be found in CCSP SAP 2.2. Kruk, NCDC | Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re-examine the issue when the Second Draft is released for review. |
| P | National Wildlife Federation | 108 | | | The Edith’s Checkerspot study is truly groundbreaking and is always good to cite, but it has been referenced many times in the literature on climate change impacts to date. It would be useful to highlight at least one other “new” study that reflects a similar change in species synchronicity or other type of ecosystem decoupling, if possible. National Wildlife Federation | Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re-examine the issue when the Second Draft is released for review. |
| P | Garfin | 108 | 3 | 5 | I recommend changing the word “synchronicity” to the word “synchroneity” in the line beginning “Failure of synchronicity between butterflies and the resources they need...” Synchronicity refers to a psychological concept (or a pop song), whereas synchroneity has a single definition: “the state of being synchronous.” I have included, below, definitions from the Merriam-Webster online dictionary. synchronicity Main Entry: syn-chro-nic-i-ty Date: circa 1889 1 : the quality or fact of being synchronous 2 : the coincidental occurrence of events and especially psychic events (as similar thoughts in widely separated persons or a mental image of an unexpected event before it happens) that seem related but are not explained by conventional mechanisms of causality —used especially in the psychology of C. G. Jung Main Entry: syn-chro-ne-ity Etymology: synchronous + -eity Date: circa 1909 : the state of being synchronous Garfin, University of Arizona | Thank you. The suggestion has been considered, but the author team has decided to retain this as is. |
| P | Williams | 110 | 1 | | Delete. Forest mismanagement is the major cause of the increase in wild fir4es and their severity not global warming. Dr. William Wallace Covington , Director , The Ecological Restoration Institute testimony before the U S Senate | Thank you. The suggestion has been considered, but the author team has decided to retain this as is. |

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| | | | | | <p>Committee on Energy and Natural Resources:” If we wanted to destroy our ponderosa pine forest landscapes, we could hardly come up with a more devastating plan than what we have done and continue to do—make a series of management mistakes and then engage in lengthy ideological debates instead of rolling up our sleeves and working to solve the problem. The fires of this year, and the past several decades, have forged a consensus that the problem of catastrophic wildfire is severe. Almost everyone agrees that restoration is the most scientifically rigorous and environmentally and economically reasonable way to proceed. Nonetheless, there is a lot of poorly informed speculation about how it should be applied,”</p> <p>Williams, Public Citizen</p> | |
| P | National Wildlife Federation | 110 | 2 | | <p>In the discussion of the Westerling study (paragraph 2), it is important to explain how these trends indicate a climate change fingerprint, above and beyond historic forest management practices.</p> <p>National Wildlife Federation</p> | Thank you. The suggestion has been considered, but the author team has decided to retain this as is. |
| P | National Wildlife Federation | 110 | 3 | | <p>The header for this section, “Increase in insect pests” is not clear. Does this mean increase in number of bugs? Number of outbreaks? Types of bugs?</p> <p>National Wildlife Federation</p> | Thank you. This header has been revised. |
| P | Williams | 110 | 3 | 4 | <p>Change “Changes in climate have contributed significantly to several major insect pest outbreaks in the United States and Canada over the past several decades.” to “Improper forest management has contributed significantly to several major insect pest outbreaks in the United States and Canada over the past several decades.”</p> <p>The Rodeo-Chesdeski fire demonstrated this very clearly. The White Mountain apaches practice good forest management and they do not have the disease problem stated and had less severe fire damage than improperly managed forest area to their west.</p> <p>Dr. William Wallace Covington , Director , The Ecological Restoration Institute testimony before the U S Senate Committee on Energy and Natural Resources: “We know that current overcrowded stands of trees do not sustain the diversity of wildlife and plants that existed a century ago. We know this by examining the data of early naturalists and scientists. We also know this to be true from primary research. Scientists that have compared biological diversity of overstocked stands—stands that have had decades of fire exclusion--with open, park-like</p> | Thank you. Space limitations preclude the additional of all suggested comments. |

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| | | | | | stands that have not had severe fire regime disruption, have found greater plant diversity, greater insect diversity, and greater bird diversity. Similar studies have also found greater old-growth tree vigor and resistance to insect attack in open, park-like stands—stands similar to those present before settlement. We also know that stopping ecologically based forest restoration that includes thinning, is not saving the forest as some would like you to believe, but only contributing to its demise and causing severe losses to the wealth of species that depend on it... If we wanted to destroy our ponderosa pine forest landscapes, we could hardly come up with a more devastating plan than what we have done and continue to do—make a series of management mistakes and then engage in lengthy ideological debates instead of rolling up our sleeves and working to solve the problem.” Williams, Public Citizen | |
| P | National Wildlife Federation | 111 | 1 | | Is there a U.S. example that could be cited? National Wildlife Federation | Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re-examine the issue when the Second Draft is released for review. |
| P | Medlock | 111 | 4 | | The section on invasive plants needs material added regarding the role of invasive aquatic species such as Hydrilla verticillata (hydrilla) and Hygrophila polysperma (hygrophila) in increasing flood heights due to loss of valley storage taken up by invading plant colonies, in addition to its effects in shading out natural vegetation, reducing oxygen level, and increasing the amount of sediments. Additionally, invasive aquatic species impact flood damage reduction structures such as dams by clogging emergency spillways and flood gates. Medlock, ASFPM | Thank you. Space limitations preclude the additional of all suggested comments. |
| P | National Wildlife Federation | 111 | 4 | | It would also be useful to explain that invasive plants can take advantage of systems “weakened” by climate change (e.g., catastrophic fires, drought). National Wildlife Federation | Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re-examine the issue when the Second Draft is released for review. |
| P | Kruk | 112 | | | Photo-Bottom right photo appears to be upside down (note the upside down numeral “1” and “2” within the photo). Photo also requires a caption. Kruk, NCDC | Thank you. This photo has been removed. |
| P | National Wildlife Federation | 112 | 1 | 1 | Perhaps clarify by saying “...and altered ocean conditions.” National Wildlife Federation | Thank you. We agree the issue is important; however, we chose to highlight and discuss it elsewhere in the report. |

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| P | National Wildlife Federation | 112 | 2 | | There should also be reference to coral diseases such as white band and black band. National Wildlife Federation | Thank you. We agree the issue is important; however, we chose to highlight and discuss it elsewhere in the report. |
| P | Kruk | 113 | | | Figure and caption move the figure and caption up on the page so it is coincident with the ending remarks on coral reefs (i.e., after the conclusion of the first paragraph). This move will in turn push the sub-header section titled “Marine Fish” lower on the page Kruk, NCDC | Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Center for Biological Diversity | 113 | 2 | | Citation 10a is not referenced in the literature cited section. This section on plankton and marine fishes could include the following citations: Beaugrand, G., Reid, P. C., Ibanˆez, F., Lindley, J. A., and Edwards, M. 2002. Reorganisation of North Atlantic marine copepod biodiversity and climate. <i>Science</i> , 296: 1692-1694. Edwards, M., and Richardson, A. J. 2004. The impact of climate change on the phenology of the plankton community and trophic mismatch. <i>Nature</i> , 430: 881-884. Hays, G. C., Richardson, A. J., and Robinson, C. 2005. Climate change and plankton. <i>Trends in Ecology and Evolution</i> , 20: 337-344. Holbrook, S. J., R. J. Schmitt, and J. S. Stephens, Jr. 1997. Changes in an assemblage of temperature reef fishes associated with a climatic shift. <i>Ecological Applications</i> 7:1299-1310. Perry, A.L., Low, P.J., Ellis, J.R., and J.D. Reynolds. 2005. Climate change and distribution shifts in marine fishes. <i>Science</i> 308: 1912-1915. Richardson, A.J. 2008. In hot water: zooplankton and climate change – <i>ICES Journal of Marine Science</i> 65: 279-295 Center for Biological Diversity | Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re-examine the issue when the Second Draft is released for review. |
| P | Center for Biological Diversity | 117 | | | Box-Adaptation Since the rapid development and implementation of adaptation strategies is critical to protecting biodiversity and ecosystem function, this section on adaptation should be expanded to include more of the recommendations in the SAP 4.4. Reduction of non-climate threats is important, but other important adaptation strategies include protecting and establishing corridors and new protected areas to facilitate movement as species’ ranges shift, protecting ecosystem function (for example, allowing coastal wetlands to move inland, keeping forests intact), restoration of impacted systems to be more resilient, protecting less impacted systems to act as refugia, and planning for representation across ecosystems. Center for Biological Diversity | Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re-examine the issue when the Second Draft is released for review. |
| P | Center for Biological | 119 | 1 | 2 | The second sentence “They include animal species such as the grizzly bear, bighorn sheep, pika, mountain goat, and wolverine” could include the following citations: | Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re-examine the issue when the Second Draft is released for review. |

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| | | Diversity | | | | <p>Beever, E. A., P. E. Brussard, and J. Berger. 2003. Patterns of apparent extirpation among isolated populations of pikas (<i>Ochotona princeps</i>) in the Great Basin. <i>Journal of Mammalogy</i> 84:37-54.</p> <p>Epps, C.W., McCullough, D.R., Wehausen, J.D., Bleich, V.C., and Rechel, J.L. 2004. Effects of climate change on population persistence of desert-dwelling mountain sheep in California. <i>Conservation Biology</i> 18 (1): 102-103 Center for Biological Diversity</p> | |
| | P | D'Aleo | 120 | | | <p>This comment focuses on the Northeast Region of the United States that the document has incorrectly captured past conditions by cherry picking start time of the data period in clear violation of the Federal Information Quality Act (IQA) which demands an honest assessment as the starting point for any analysis. Further since it has been admitted by the IPCC that the models and modeler lead authors such as Kevin Trenberth show no little skill in predicting regional weather, there is no basis for any projections of impacts for any region when starting with an inaccurate initial assessment.</p> <p>Whatsmore in your rush to publish anything before the elections, and before all the support documents were completed, you neglected to count states and left out West Virginia and Maryland. You have 2 less states (8 less than one of the Presidential candidates).</p> <p>The Statement in question is on page 120. Totally bogus impacts were also shown on tourism for this region on page 47.</p> <p>WINTER I have addressed serious data issues including big cities (New York's Central Park) and small (Ripogenus Dam, Maine) in a separate document and will not repeat them here. Refer to my document on Data Integrity Issues.</p> <p>TEMPERATURES The first complaint here has to do with cherry picking starting and end times to get the desired result, in this an apparent warming to justify claims that greenhouse gases are to blame. You can who almost anything with cyclical data patterns. Your biased team members are masters at this deception in clear violation of the IQA. It appears the authors of this and pother regional sections were not qualified meteorologists or climatologists as the information provided could not be done by anyone with those qualifications.</p> <p>The climate of the northeast has shown a cyclical temperature and precipitation pattern in line with cyclical changes in the oceans (PDO and AMO). There is no sign of any net warming in winters</p> | <p>Thank you. The text in question has undergone major revisions that we believe address the reviewer's concerns. The reviewer may re-examine the issue when the Second Draft is released for review.</p> |

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| | | | | | | <p>which the document claims has had the greatest warming from maximum to maximum or minimum of the cycles. The plot below has as a source NCDC regional temperatures. The report chose 1970 as the starting point of the analysis to show warming that is not present in long term trends. These temperatures in the northeast cycle with both the PDO and AMO which influence relative frequency El Nino and La Nina and the frequency and strength of North Atlantic blocking (NAO).</p> <p>(Note: Figure – in digital file)</p> <p>DROUGHTS PEAKED IN THE COLD 1960S The document has no sense of history (or of much else) as the greatest drought have occurred in cold eras like the 1960s.</p> <p>SNOWFALL MOVED TO THE CITIES DURING THE WARM PDO, NOW MOVING BACK TO SKI COUNTRY WITH COLD PDO</p> <p>Snowfall in the northeast is affected by the PDO/ENSO and NAO. During the period from 1979 to 1998 when there was a positive PDO there were more El Ninos. The PDO popped positive again in the 2002-2005 winters with 3 relatively weak El Ninos.</p> <p>El Ninos, especially weak ones have a suppressed southern storm track that favors snow for the coastal cities with generally less in northern New England ski areas. The snowstorms are especially likely when the NAO is negative (Atlantic blocking exists) which has been more frequent after 1995 when the AMO went into its warm mode. A warm AMO favors a negative NAO.</p> <p>Despite all the claims of disappearing snow and ice due to global Warming, the last dozen years or so has been among the snowiest ever here in parts of the US and in other parts of the world with numerous all-time storm, season and multi-season snowfall records broken.</p> <p>It started in March of 1993, when the “Storm of the Century” brought heavy snowfall (1 up to 4 feet) from Alabama to New York and New England (2-4 feet) with losses that totaled \$7.6 billion and approximately 270 deaths. Then in January of 1996, the “Blizzard of ‘96” deposited again 1-4 feet of snow over the Appalachians, Mid-Atlantic, and Northeast; followed by severe flooding in parts of same area due to rain and snowmelt inflicting approximately \$3.5 billion damage and 187 deaths.</p> <p>(Note: Figure – in digital file)</p> <p>That winter, with strong blocking suppressing the storm tracks, the snows started early and never stopped coming. All-time seasonal snowfall records were set in dozens of cities in the east and central states including Boston (107.6” or 286% of normal), New York City (75.6 inches of 276% of normal), Philadelphia (63.1 inches or 303% of normal) and Baltimore, MD (63.5 inches or 303% of normal)</p> <p>(Note: Table – in digital file)</p> | |

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| | | | | | | <p>In the last few years, all time single storm records were shattered in the northeast cities. On February 11-12th 2006 a blizzard set new all-time snowstorm record for Central Park in New York City with 26.9 inches. On February 17-18, 2003, a snowstorm set new all-time snowfall record for Boston with 27.5 inches. Another blizzard on January 24-25 2005 brought 22.5" at Boston's Logan Airport, along with high winds, 6 foot drifts and bitterly cold temperatures. Many measurements however near Logan were 27-28" and the storm was compared by many to the blizzard of '78.</p> <p>Despite the CCSP and IPCC claim in their 4th Assessment that cities with winter average temperatures near 32F are seeing less snowfall and more rainfall, this is not the case in the eastern United States. Boston has an average winter temperature of 32F. Boston since 1992/93 had had 5 years that rank among the top 10% snowiest winters in over 130 years of record, including numbers 1, 3, 5, and 7 (source Boston NWS).</p> <p>(Note: Table – in digital file)</p> <p>If you do a running mean of average snowfall over dozen years, the period from 1993/94 through 2004/05 for Boston, the average is the highest in the entire record dating back to the 1880s.</p> <p>(Note: 2 Figures – in digital file)</p> <p>New York City (with annual snowfall data back to 1869) has an average January temperature (their coldest month) of 32F. New York City for the first time EVER ending 2005/06, had four successive years with over 40 inches of snow the last four winters. Its four-year running mean was the highest its entire 137 year record.</p> <p>WHAT IS BEHIND THIS SNOWFALL BLITZ? Snowfall here in the Northeast relate to decadal scale cycles in the Pacific, Atlantic and Arctic.</p> <p>When the Pacific Decadal Oscillation flipped from its cold to warm mode in the Great Pacific Climate Shift in 1977, El Nino frequency increased. In the warm mode, more El Ninos are favored (two to one over La Ninas), and when they are weak to moderate this often translates into heavy snows in the eastern United States especially when the Quasi-Biennial Oscillation (QBO) is west.</p> <p>CPC research by Livesey, Barnston and Halpert showed how a west QBO El Nino favors the positive PNA pattern with an eastern trough which predisposes the east to east coast storms. Indeed 2/3rds of the top dozen heaviest snow years since the 1870s for Boston were El Nino West QBO seasons.</p> <p>(Note: Figure, and graph inserted – in digital file)</p> <p>Also important to the snow increases has been a shift of two atmospheric oscillations, which generally operate in tandem, the North Atlantic Oscillation (NAO) and Arctic Oscillations (AO). These oscillations have significant control over the weather pattern including winter storm tracks and temperatures in both Europe and the eastern United States.</p> <p>(Note: Graphic inserted – in digital file)</p> <p>Since the middle 1990s, these oscillations have more often been in the phase that favors cold and snow (the negative or 'cold' phases) in both Europe and the eastern United States. Like the PDO, the NAO and AO tend to be predominantly in one mode in the other for decades at a time.</p> <p>The Atlantic Multidecadal Oscillation is responsible for the NAO/AO decadal tendencies. When the Atlantic is cold, the AO and NAO TEND towards the positive state, when the Atlantic is warm on</p> | |

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| | | | | | | <p>the other hand, the NAO/AO TEND to be often negative. This means high latitude blocking and enhanced coastal storm activity in the United States and Mediterranean storms that bring snows to Europe.</p> <p>(Note: 2 Figures and graph inserted – in digital file)</p> <p>Meanwhile northern New England gets shortchanged when the major cities get heavy snows in many El Nino winters. La Nina and a cold PDO is the recipe for above normal northern area snowfall. This was clearly seen in the frigid and very heavy snow La Nina winter of 2000/01 which had strong blocking when the northern half of New England was paralysed by major snowstorms early and especially again late (March). This winter that same recipe was served with a strong La Nina and cold PDO and all-time snow records were set in areas Concord New Hampshire north and east, in some places where 120 plus years of records were kept.</p> <p>This was the best ski season on record for many areas from the west to the Midwest, Great Lakes and northeast. Ironically it came just months after a summit on Mount Washington which predicted a disastrous future for the winter sports and tourism industry much as this totally bogus report.</p> <p>Given the switch to the cold PDO, continued warm AMO for another decade and a very low solar, the northeast will see colder snowier winters across the north and milder and drier winters in the mid-Atlantic on average. The occasional weak El Ninos will be cold and snowy in the cities down to the Mid-Atlantic especially when the QBO is west and NAO negative. Temperatures will continue the slow decline seen in the last 8 years or so, perhaps accelerating if the solar cycles is a Dalton type minimum as many solar scientists project.</p> <p>Instead of becoming more like the Carolinas, New Hampshire will become more like Quebec in the next few decades.</p> <p>NO MENTION OF HURRICANES</p> <p>Since 1995, the Atlantic has become twice as active on average as the prior 25 years, similar to the period from 1930s to 1960s. This is due to a shift to the ‘warm’ mode of the multi-decadal scale oscillation in the Atlantic Ocean. Most of the storms making landfall during the past 12 years have impacted the Mid-Atlantic region, Florida and the Gulf of Mexico. However, though not yet realized, history tells us that the risk has also increased for more populated areas to the north New York City/(Long Island and New England).</p> <p>(Note: 3 Figures inserted – in digital file)</p> <p>It appears the Pacific plays a role too. The cold mode of the PDO (in place this summer) favors New York and New England landfalls in large part because it favors La Nina. We had a strong La Nina this past winter into the early spring but it has in recent months, warmed in the eastern tropical Pacific. It is unclear whether that will save the east coast and the northeast one more year.</p> <p>(Note: Figures and graphs inserted – in digital file)</p> <p>You can see La Nina years when the Atlantic is warm produced 15 landfalling east coast storms in 9 years, 11 were major hurricanes, 9 affecting the northeast directly on second or third landfall. The deadly 1938 hurricane was discussed here.</p> | |

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| | | | | | | <p>CORRECTION REQUIRED Because of these serious misanalysis and errors of both commission and omission with cherry picking dates for current trends and lack of understanding of the real forcings at play, this entire section on regional climates clearly violates the data quality act and should be deleted or rewritten.</p> <p>If you wish to correct these data issues and correctly show the historical changes and include a more accurate forecast, it is suggested that the following wording be substituted:</p> <p>NORTHEAST The Northeast has significant geographic and climatic diversity within its relatively small area. The character and economy of the Northeast have been shaped by many aspects of its climate including its snowy winters, colorful autumns, and variety of extreme events such as nor'easters, ice storms, and heat waves. Changes over the decades have proceeded in a predictable cyclical fashion and similar changes are expected this century.</p> <p>Looking at cycles of temperatures over the century, there are peaks and valleys with little change in the magnitudes of the maxima and minima. The most recent maxima in the late 1990s was similar to that in the early 1950s. These changes relate to cycles in both the Atlantic and Pacific as well as solar. Local warming around cities is also evident due to land use and urban factors.</p> <p>As we head into a low solar period with a negative PDO and for a while longer a positive AMO, we can expect</p> <ul style="list-style-type: none"> • More frequent and stronger La Ninas which can mean more extreme cold and more snow across northern areas and less in the cities and southern areas • We can expect more thunderstorm days in spring and summer with some hot summers in La Nina onset years • Increased snowpack across the mountains will enhance winter sports activity • It will mean more spring melting and flood potential • There will be later breakup of winter ice on lakes and rivers • Increased chances of landfalling hurricanes in La Nina summers while the Atlantic stays warm for the next decade. In the 9 years when the PDO was negative and La Ninas occurred while the AMO was positive this past century, there were 15 landfalling storms along the east coast, 11 were major (CAT 3 to 5) and 9 affected the northeast directly or after landfall to the south. • Land and oceans will cool and sea level rises will be minor. Temperature falls will be exaggerated if the Dalton Minimum scenario occurs. <p>All of these observed regional changes are consistent with ones expected to result from cyclical climate change. The cooling taken together with the unwise environmental plans now already in place in some states, will dramatically alter the region's economy, and quality of life for the worse.</p> <p>Over the next several decades, temperatures are projected to fall an additional 2.5 to 4°F in winter based on past cycles. It could be larger in the Dalton scenario. By mid-century and beyond, however, we should emerge from the cold phase and return to a more acceptable climate for a few decades.</p> | |


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| | | | | | (Note: References stated – in digital file) D’Aleo, Fellow of AMS | |
| P | Knappenberger | 120 | 1 | | <p>Second to last sentence</p> <p>The citation for sentence (citation 1) is (unbelievably) a reference to a report by the Union of Concerned Scientists. The UCS report is neither peer-reviewed literature nor official government data, as such, it does not fit into the description of relied-upon material provided on page 14. The UCS is an organization who issued the report in support of its efforts advocating a regulatory position on greenhouse gas emissions.</p> <p>Recommendation: Either remove all reliance on the UCS report, or redo the “About this Report” section to indicate that you are relying on information from advocacy organizations with an openly-stated political agenda. Otherwise you are grossly misleading the reader.</p> <p>Knappenberger, New Hope Environmental Services</p> | Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | Knappenberger | 120 | 4 | 1 | <p>Yes! The implications are overwhelmingly positive. See the series of papers by Davis et al. (Davis et al., 2003, International Journal of Biometeorology; Davis et al., 2003, Environmental Health Perspectives). Davis et al. found 1) that the sensitivity to extreme heat in the population’s of cities in the Northeast has been declining over the past 3-4 decades, despite rising summertime heat, and 2) that in locations where heat waves are more common, the population is even better adapted to them and thus less sensitive. Therefore, if heat waves become more common events in the future, the region will become much better prepared and adapted to them. This is evident from the vastly different response to heat waves in Chicago in 1995 and 1999 (Palecki, M.A., S.A. Changnon, and K.E. Kunkel, 2001. The nature and impacts of the July 1999 heat wave in the midwestern United States: Learning from the lessons of 1995, Bulletin of the American Meteorological Society, 82, 1353–1367.), as well as in France in the 2003 and the 2006 heat waves (Fouillet, A., G. Rey, V. Wagner, K. Laadi, P. Empereur-Bissonet, A Le Tetre, P. Frayssinet, P. Bessemoulin, F. Laurent, P. De Crouy-Chanel, E. Jouglu, and D. Hémon, 2008. Has the impact of heat waves on mortality changed in France since the European heat wave of summer 2003? A study of the 2006 heat wave. International Journal of Epidemiology, doi:10.1093/ije/dym253). Adaptation to heat waves takes place rapidly. Even better news for human health can be found on the first illustration on page 121 which shows where the climate of New Hampshire may take it in the future. Whether it ends up being like Washington DC or like Charlotte, NC, the outlook for the response to heat-waves is excellent because in either of these location (as is true for most cities across the southeast and southern tier of the country) there are virtually no statistically detectable heat-related deaths in recent decades.</p> <p>Notice the large declines in heat-related mortality for the Northeastern cities of Boston, New York, and Philadelphia in the figure below as well as the lack of any statistically distinguishable heat-related deaths in Washington DC or Charlotte NC in the 1990s. The future definitely looks brighter for the Northeast, as far as human-response to heat waves.</p> <p>(Figures inserted here. Part of electronic file)</p> | Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |

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| | | | | | <p>Annual average excess summer mortality due to high temperatures, broken down by decade, for 28 major cities across the United States. For each city each of the three bars represents the average mortality during successive decades (left bar 1964-66 + 1973-1979; middle bar 1980-1989, right bar 1990-1998). Bars of different color indicate a statistically significant difference. No bar at all means that no temperature/mortality relationship could be found during that decade/city combination (taken from Davis et al., 2003, Environmental Health Perspectives).</p> <p>Recommendation: Emphasize the positive outlook for increasing frequency of heat waves across the Northeast and include a figure that is the close-up of the trend in heat-related mortality across the Northeast, like the example below (I'll gladly provide you with one as I have the actual data).</p> <p>Without such an update, the statement fails to meet the authors' claim of conveying the "best available science" (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | |
| P | Knappenberger | 120 | 5 | 1 | <p>Trends in ground level ozone are strongly negative across the Northeast for the past several decades meaning that air quality has been improving across the region despite rising air temperatures! These observations contrast with your pessimistic projections.</p> <p>(Note: Figure inserted here. Part of electronic file)</p> <p>Change in ozone concentrations in ppm, 1990-1992 vs. 2004-2006 (3-year average of annual fourth highest daily maximum 8-hour concentrations) (source: http://www.epa.gov/air/airtrends/2007/report/groundlevelozone.pdf).</p> <p>Recommendation: Note the positive trends in air quality across the regions which have occurred despite rising temperatures—a strong indication that climate change does not necessarily mean bad things for the region's air quality and include the map of ground level ozone trends illustrated above (easily available from the EPA).</p> <p>Without such an update, the statement fails to meet the authors' claim of conveying the "best available science" (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | |
| P | Knappenberger | 121 | 1 | 1 | <p>As I discussed above, a warming climate should mean good things for the population's response to heat waves as more frequent heat waves will spur improved adaptive measures such as increased public awareness of potentially dangerous weather situations, and proactive responses of municipalities during extreme weather events. The text points out the relative lack of air conditioning</p> | <p>Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text.</p> |

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| | | | | | <p>in the New England homes, but luckily air conditioners are readily available as represent an easy adaptation to undertake.</p> <p>Recommendation: Emphasize the positive aspects of a warming climate as it makes heat waves more common and thus the population will become better prepared for them.</p> <p>Without such an update, the statement fails to meet the authors’ claim of conveying the “best available science” (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | |
| P | Knappenberger | 121 | 3 | | <p>Do the projections in milk production allow for changing types of dairy cattle and farming practices? Why should dairy production in the Northeast suffer when as the map below (taken from the EPA) illustrates, milk is produced all across the U.S. including in locations with a far warmer climate than the Northeast is projected to have at the end of the 21st century under even your worst-case scenario. Texas and New Mexico rank among the top-10 milk producing states in the county. Instead of seeing their production steadily decline as the climate changes, I am sure that the dairy farmers in the Northeast will take the necessary steps to insure continued success.</p> <p>(Note: Figure inserted here. Part of electronic file)</p> <p>Ranking of milk production by states (source: http://www.epa.gov/oecaagct/ag101/dairybackground.html)</p> <p>Recommendation: Emphasize that while climate change may force dairy farmers in the Northeast to alter their production methods, they should be able to readily adapt and continue to be successful in raising milk producing cows.</p> <p>Without such an update, the statement fails to meet the authors’ claim of conveying the “best available science” (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | <p>Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text.</p> |
| P | Knappenberger | 121 | 4 | 1 | <p>Not sure which “ice flow dynamics” you are talking about here. A series of recent papers (van de Wal, R.S.W., et al. 2008. Velocity changes in the ablation zone of the Greenland Ice Sheet, Science, 321, 111-113; Howat, I., et al., 2007. Rapid changes in ice discharge from Greenland outlet glaciers. Science, 315, 1559-1651; Joughin, I., et al., 2008. Seasonal speedup along the western flank of the</p> | <p>Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text.</p> |

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| | | | | | <p>Greenland Ice Sheet. Science, 320, 781-783) indicate that ice flow dynamics are not sufficient to suggest a major speed-up of glacial flow rates in Greenland.</p> <p>Recommendation: Remove this sentence. As it now stands, the statement fails to meet the authors' claim of representing the "the best available science" (p. 14) and of conveying "the most relevant and up-to-date information possible" and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | |
| P | Knappenberger | 122 | | | <p>Section on ski industry</p> <p>There is nothing in this section about the efforts of the ski industry to counter the potential loss of winter recreational opportunities (and lost revenue) by expanding recreational opportunities (and increasing revenue) in the other seasons. And yet such efforts are underway (for example, http://www.completenewengland.com/index.php/2008/05/17/the-survival-of-the-new-england-ski-resort-species/). There is also no description of any kind of any other such efforts to promote tourism and other recreational activities in the Northeast in the non-winter seasons, or even any hint that such a strategy, if it is not being employed now, will surely be a good one for the future. The future is not as dark as you all seem intent on making it out to be!</p> <p>Recommendation: Add some comments about how the ski industry is coping now and may cope in the future. You speculate on bad impacts, what can't you speculate of some good ones?</p> <p>Knappenberger, New Hope Environmental Services</p> | <p>Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text.</p> |
| P | Freitag | 124 | 1 | 3 | <p>The claim of a 2°F temperature rise in the Southeast US is contradicted by observed data collected as part of USHCN as indicated here (McIntyre plot). Recommend correcting statement or further defining limits to the statement.</p> <p>Average calculated for USHCN stations east of 100W; south of 37N shows an upward trend in annual temperatures since 1970, but appears as a recovery compared to the first half of the 20th century. Certainly, it cannot be considered unusual.</p> <p>Two key graphics from the AR4 also show a cooling trend in the Southeast (NOTE: Graphs included in his comment. Attached at end of collation for your consideration.)</p> | <p>Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text.</p> |

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| | | | | | Freitag, Public Citizen | |
| P | Freitag | 124 | 1 | 5 | NOAA disagrees with your statement. For example, NOAA 2001-008 entitled, FROST DAYS DECREASING ACROSS THE UNITED STATES EXCEPT INSOUTHEAST states, “But the southeastern United States, which is one of the few areas of the world showing cooling over the 20th century...” Recommend eliminating reference to increased frost days. Freitag, Public Citizen | Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re-examine the issue when the Second Draft is released for review. |
| P | Knappenberger | 124 | 1 | 2 | You failed to mention that despite the recent warming trend, temperatures in the Southeast have yet reach the warmth that was commonplace in the 1920s through the 1950s in the region, or that there has been no long-term change in temperatures in the region for more than 100 years. All of a sudden, in this section, you switched to discussing 50 or 100 year temperature trends and instead now only discuss 30 year trends. That seems odd (or convenient). (Note: Figure inserted here. Part of electronic file) Temperature history of the Southeast (source: NCDC) Recommendation: Include an illustration similar to the one above and describe how temperatures were typically higher in the Southeast during the 1920s through the 1950s than they are now. As it now stands, the statement fails to meet the authors’ claim of representing the “the best available science” (p. 14) and of conveying “the most relevant and up-to-date information possible” and otherwise violates applicable objectivity requirements. Knappenberger, New Hope Environmental Services | Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re-examine the issue when the Second Draft is released for review. |
| P | Knappenberger | 124 | 3 | 2 | the list of citations (cite 3,4,5,6,7) Comment: Well, you certainly hit upon the hurricane literature that was all the rage a couple of years ago! But somehow you left off the long list of subsequent literature that suggest that 1) the relationship between hurricanes and SST is not as strong as suggested in those papers, and 2) that the behavior since 1975 is not particularly unusual in the overall history of Atlantic hurricanes, and 3) that the behavior of hurricanes since 1975 is likely not related to anthropogenic “global warming.” The AOML has a good bibliography of relevant hurricane literature (http://www.aoml.noaa.gov/general/lib/Regional/climate_change/climatechangechronology.htm). Here are a few papers to start with: | Thank you. References have been reviewed and updated. |

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|  | | | | | | <p>Briggs, W.M. 2008. On the changes in the number and intensity of North Atlantic tropical cyclones. Journal of Climate, 21, 1387-1402.</p> <p>Knutson, T.R., et al., 2008. Simulated reduction in Atlantic hurricane frequency under twenty-first-century warming conditions. Nature Geosciences, doi:10.1038/ngeo202</p> <p>Wang, C., & Lee, S.K. (2008). Global warming and United States landfalling hurricanes. Geophysical Research Letters, 35(1), L02708.</p> <p>Kossin, J.P., & Vimont, D.J. (2007). A more general framework for understanding Atlantic hurricane variability and trends. Bulletin of the American Meteorological Society, 88(11), 1767-1781.</p> <p>Landsea, C.W. (2007). Counting Atlantic tropical cyclones back to 1900. EOS: Transactions of the American Geophysical Union, 88,</p> <p>Latif, M., Keenlyside, N., & Bader, J. (2007). Tropical sea surface temperature, vertical wind shear, and hurricane development. Geophysical Research Letters, 34(1), L01710.</p> <p>Nyberg, J., Malmgren, B.A., Winter, A., Jury, M.R., Kilbourne, K.H., & Quinn, T.M. (2007). Low hurricane activity in the 1970s and 1980s compared to the past 270 years. Nature, 447(7145), 698-701.</p> <p>Vecchi, G.A., & Soden, B.J. (2007). Effect of remote sea surface temperature change on potential tropical cyclone intensity. Nature, 450(7172), 1066-1070.</p> <p>Vecchi, G.A., & Soden, B.J. (2007). Increased tropical Atlantic wind shear in model projections of global warming. Geophysical Research Letters, 34(8), L08702.</p> <p>Klotzbach, P.J. (2006). Trends in global tropical cyclone activity over the last twenty years (1986-2005). Geophysical Research Letters, 33(10), L10805.</p> <p>Recommendation. Bring your literature and your conclusions up-to-date. As it now stands, the statement fails miserably to meet the authors' claim of representing the "the best available science" (p. 14) and of conveying "the most relevant and up-to-date information possible" (p. 14) and otherwise violates applicable objectivity requirements.</p> <p>Knappenberger, New Hope Environmental Services</p> | |
| | P | Knappenberger | 125 | 1 | | <p>Bullet 1</p> <p>A more incorrect statement could not have been made (as we have been through this many times before in my Comments). First of all, the citation is inappropriate. Citation 9 is given in the endnotes for the Chapter as 'World Health Organization, 2008: Protecting Health in Europe from Climate Change' it is not applicable to the Southeastern United States.</p> <p>The most applicable reference should be:</p> <p>Davis, R.E., P.C. Knappenberger, P.J. Michaels, and W.M. Novicoff, 2003: Changing heat-related mortality in the United States, Environmental Health Perspectives, 111(14), 1712-1218.</p> <p>Of course, the Davis et al. reference concludes the exact opposite of the first bullet.</p> <p>Recommendation: The bullet should be changed to read 'The southeast will be largely unimpacted by changes in the summer heat stress as this area is virtually</p> | <p>Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text.</p> |

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| | | | | | <p>completely adapted to high temperature events.” As it now stands, the statement fails miserably to meet the authors’ claim of representing the “the best available science” (p. 14) and of conveying “the most relevant and up-to-date information possible” (p. 14) and otherwise violates applicable objectivity requirements. In fact, it is an out and out fabrication.</p> <p>Knappenberger, New Hope Environmental Services</p> | |
| P | Knappenberger | 125 | 2 | 1 | <p>Holy smokes, you all actually do know about the Davis et al. mortality studies! But, for some reason, the above mentioned Davis et al. reference (listed as reference 15 in the endnotes for the Chapter) is used as a citation for a sentence about cold vs. warm season deaths—a topic that is not covered by Davis et al. and thus is an inappropriate reference as cited! This is amusing, there are probably a dozen or more places in this report that the Davis et al. (2008) reference should have been relied upon, but the one place that you do use it, is incorrect. Nice work. The appropriate Davis et al. reference that shows that heat-related mortality typically exceeds cold-related mortality is:</p> <p>Davis, R.E., Knappenberger, P.C., Michaels, P.J., and W. M Novicoff, 2004. Seasonality of climate-human mortality relationships in US cities and impacts if climate change. <i>Climate Research</i>, 26, 61-76.</p> <p>Recommendation: Change citation 15 in the Southeast Chapter to the above citation.</p> <p>Knappenberger, New Hope Environmental Services</p> | <p>Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text.</p> |
| P | Center for Biological Diversity | 126 | | | <p>Because sea level rise threatens a large portion of the state of Florida--particularly the biodiverse and unique Everglades ecosystem--and the coastal areas of the southeast, a graphic illustrating the loss of land in the southeast under different sea level rise scenarios would be more instructive than the current photos.</p> <p>Center for Biological Diversity</p> | <p>Thank you. The suggestion has been considered, but the author team has decided not to include this.</p> |
| P | Angel | 128 | | | <p>Figure: Climate on the Move</p> <p>right hand figure: I believe the placement of Illinois in eastern TX is from an old Union of Concerned Scientists publication that came out several years ago, featuring an older version of the Hadley Centre model that was extremely warm and dry for the Midwest. This figure should be updated to reflect the model runs from the latest IPCC study. I have seen a more recent version of the map that has Illinois in Oklahoma. Furthermore, the problem with this approach is that you can portray only a few model runs before the map gets crowded. At the Water Survey, we did a full analysis of the GCM model runs used in the latest IPCC report. For Illinois, summer temperatures increased by 5 to 15F (A2 scenario) and by 1 to 7F (B1 scenario) by 2095. Summer precipitation ranged from a 21% increase to a 51% decrease (A2) and from a 13% increase to a 21% decrease</p> | <p>Thank you. Regarding other comments, it is inappropriate to use all models in an analysis of regional climate effects. For example, the coarse structure of the GISS model makes it totally inappropriate for regional studies (go ask the GISS scientists). Other models are known to have severe weaknesses for representing climate in the U.S. for use in regional studies. Also, we are not just using the models directly but using statistical downscaling approaches that combine past observations in the region with the model results. As a result, we do not find the ISWS analyses on the website provided to be an acceptable approach to regional evaluations. Don Wuebbles would be happy to further discuss the analyses they have used for this assessment.</p> |

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| | | | | | (B1) by 2095. Clearly there is a much broader set of temperature and precipitation scenarios than can be presented by a map. The results mentioned here can be found at: http://www.sws.uiuc.edu/wsp/climate/ClimateTom_scenarios.asp Angel, Illinois State Water Survey | |
| P | Angel | 128 | 2 | 1 | I do not agree with the statement that "Heat waves have been more frequent in the past few decades." In Illinois, heat waves were more common in the 1930s and 1940s. An examination of records at Midway Airport in Chicago shows that the frequency of days at or above 90F has decreased slightly since the 1930s with large year-to-year variations. Using a 100F threshold, there were 24 occurrences in the 1930s but only 6 in the 1990s and 2 in the 00s at Midway. While Midway Airport is in the middle of the urban area, other stations in Illinois show a similar pattern. While the 1995 and 1999 heat waves were indeed tragic, by themselves they don't support a statement that heat waves have been more frequent in the last few decades. Angel, Illinois State Water Survey | Thank you. The text has been revised to clarify our discussion and we also cite Ken Kunkel's analysis that is shown in SAP 3.3. The SAP 3.3 analysis also supports our statement that heat waves have become more frequent the last few decades relative to periods before except for the highly unusual situation of the 1930s (a special event that certainly cannot be called long term climate change). |
| P | Knappenberger | 128 | 2 | | Throughout this paragraph you make claims about the projected increase in heat waves across the Midwest and yet not once do you describe that the population's sensitivity to excessive heat has been declining across the region in recent decades. And as the data on heat-related mortality in the warmer portions of the country shows, the more that high temperatures are commonplace in a region, the better adapted the population is to them, and consequently heat-related mortality rates decline. I realize that you all are probably getting tired of me making the same point over and over, but if you all would have initially incorporated this information into your text and portrayed the situation as it really is, rather than how you'd like it to be, I wouldn't have to keep doing this. Recommendation: Emphasize the positive outlook for increasing frequency of heat waves across the Midwest and include a figure that is the close-up of the trend in heat-related mortality across the Midwest, like the example below (I'll gladly provide you with one as I have the actual data). (Note: Figure inserted here. Part of electronic file) Without such a modification, the statement fails to meet the authors' claim of | Thank you. We put in a statement about adaptation measures. We also reference the relevant analyses in SAP 3.3. |

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| | | | | | conveying the “best available science” (p. 14) and otherwise violates applicable objectivity requirements. Knappenberger, New Hope Environmental Services | |
| P | Knappenberger | 128 | 2 | | Last sentence This claim is preposterous. According to the source of your figure on page 23 (Schår et al., 2004, Nature, doi:10.1038/nature02300), the European heat wave of 2003 was about a 46,000-yr event. I would like to see the analysis that shows that the expected return interval of a 46,000-yr event currently becomes 1 in 2 in the future. Recommendation: Remove reference to the 2003 European heat wave. Without such an update, the statement fails to meet the authors’ claim of conveying the “best available science” (p. 14) and otherwise violates applicable objectivity requirements. Knappenberger, New Hope Environmental Services | Thank you. The same author, Schår, in a paper later the same year in Nature, with J. Jendritzky, disagrees with your comment and notes that Stott et al (Stott, P. A., Stone, D. A. & Allen, M. R. <i>Nature</i> 432 , 610–614, 2004) finds that the European heat wave was due to the human influence on climate. If you reread the original Schår et al. paper, you will find you are also misrepresenting what it says, particularly its warning about not over interpreting the analysis they did. Our analyses were applied to the Chicago area based on the analyses of Kalkstein et al. (Kalkstein, L. S., J. Scott Green, D. M. Mills, A. D. Perrin, J. P. Samenow, and J.-C. Cohen, 2008: Analog European heat waves for U.S. cities to analyze impacts on heat-related mortality. <i>Bulletin of the American Meteorological Society</i> , 89 , 1-11) in combination with the statistical downscaling of climate change done for the Chicago assessment. |
| P | Garfin | 136 | 1 | 6 | Statement in draft USP document: “The region has experienced the most rapid population and urban growth since the 1940s, a time with relatively few droughts until quite recently.” Comment: Relatively few droughts...are you serious? There were few droughts, except for the 1950s drought, droughts during the 1960s, the late 1970s, and the late 1980s drought. If you mean lower severity droughts than the 1100s or 1500s, then say so, but ignoring the especially 1950s drought will reduce the credibility of this document. By the way, I used the NCDC Southwest Region PHDI graph for determining the dates of the droughts that I mention - http://www.ncdc.noaa.gov/img/climate/research/prelim/drought/Reg107Dv00_palm06_pg.gif Garfin, University of Arizona | Thank you. The wording has been revised. |
| P | Houck | 136 | 2 | | It is strongly cautioned against making the strong statement – “Climate change is well underway in the Southwest”. While many experts believe it, this has not been conclusively proven, and stating this as fact is dangerous. It is not unanimous that this is not simply a “hot spell” not unlike those experienced in the past. While many experts will probably agree with this statement as written, it is inappropriate as stated here. In the following paragraph, the same comment | Thank you. The wording has been revised. |

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| | | | | | <p>goes for “human-induced warming is also causing a decline in spring snowpack and Colorado River flow”. This should not be stated as fact. There is no direct evidence that climate change is responsible for declines in snowpack. This has not been observed in a true cause-and-effect sense, and it is only a theory regarding future conditions. The only absolute inference that can be made is that climate change would alter the timing of snowmelt. The same comment can be made for Colorado River flows. While there is no question that flows into Lake Powell have been significantly reduced in recent years, this appears to be more related to a fairly substantial regional drought (which may or may not be related to climate change) than proven climate change. This should not be presented as fact as stated. Houck, P.E., CFM; ASFPM, Colorado Water Conservation Board</p> | |
| P | Garfin | 136 | 4 | 9 | <p>Statement in draft USP document: “Water is, quite literally, the lifeblood of the Southwest.”</p> <p>Comment: This statement is completely meaningless. Water is the lifeblood of everywhere on Earth. I recommend changing the statement to something like “Water is the most important climate-related economic factor in this driest part of the United States.” Garfin, University of Arizona</p> | Thank you. The suggestion has been considered, but the author team has decided to retain this as is. |
| P | Garfin | 137 | 2 | | <p>Inset box on “Future of Drought in the Southwest”, end of the last paragraph: Comment: I think you can add to the punch of this section by pointing out the late 1800s drought, which almost wiped out ranching in the Southwest...at a time when there were hardly any people here. I also think that the “one-two punch “of climate variability and human-induced climate change is OK, but the knockout punch is the combo of climate variability, climate change, and growth. This sets up the document to confront the key reality of the region, and it lends emphasis on a part of the issue that is tractable: we can affect our vulnerability by dealing with growth; we will not be able to change climate variability or human-induced climate change in a way that will produce obvious results (i.e. through carbon mitigation) for many years. Garfin, University of Arizona</p> | Thank you. The suggestion has been considered, but the author team has decided to retain this as is. |
| P | Garfin | 138 | | | <p>Photo: Joshua Tree Comment: Come on CCSP, surely you can insert a better photo of a Joshua Tree. The one on page 138 was taken by someone’s office or home. The U.S. has a Joshua Tree National Monument. Can’t you get a photo of a Joshua Tree “in the</p> | Thank you. This photo has been removed. |

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| | | | | | wild” from Joshua Tree National Monument? Garfin, University of Arizona | |
| P | Michaels | 138 | | | Picture-Lake Powell Profoundly misleading. The “bathtub ring” is the high water mark from the 1983 El Nino, far above the mean lake level. Hasn’t ANYONE involved in this report been to Lakes Mead or Powell where the guide will be happy to inform what that ring is from? Michaels, Cato Institute and University of Virginia | Thank you. We have selected another photo of Lake Powell for use elsewhere in the document. |
| P | URS | 138 | 2 | | add to the second paragraph the inclusion of invasive plants (Salt Cedar) species in the floodplains of the Rio Grande. They use up a tremendous amount of what little water there is in the River, and out-compete the cottonwood trees in the Bosque for water, thus increasing the likelihood of wildfires. URS | Thank you. Space limitations preclude the additional of all suggested comments. |
| P | URS | 138 | 2 | | add to the second paragraph a mention of endangered species (silvery minnows) located within arid region waterways. Water is usually diverted for agricultural farm usage from the rivers and irrigation canals in order to release or “push downstream” the endangered species. Again, in arid conditions, water usage is being competed for, man vs. animal. URS | |
| P | Coats | 139 | | | Figure-top of page I suspect that there is a mistake in the figure on P. 139, at upper left (“Decreasing California Snowpack”), in the middle panel. I think the sub-caption should read “Lower Warming Range Wetter Climate”, not “...Drier Climate”. I note that a very similar figure from the same source showing increased risk of wildfire (endnote 22) says “...Wetter Climate”. Most the models that show moderate warming in California over the next century (either due to lower emissions scenarios or more conservative model results) also show a slight trend toward a wetter climate, whereas the model results showing moderate to high warming trends show a trend toward drier climate. I suggest you contact the authors of the original source, and get them to correct the figure, if necessary. Coats, University of CA (Davis), Visiting Scholar | Thank you. The figure has been removed. |
| P | Coats | 139 | | | I think it would be useful to include a text box, as at the bottom of p. 139, highlighting the effects of climate change on Lake Tahoe. Below is my suggested text, with 3 references and a photo of Lake Tahoe. It could go in the section on the Southwest, or alternatively in either the “Natural Environment and Biodiversity” section or the one on “Complex Interactions”. Let me know if you | Thank you. Space limitations preclude the additional of all suggested comments. |

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| | | | | | would like more detail. Coats, University of CA (Davis), Visiting Scholar | |
| P | Williams | 139 | | | Box: Adaptive Strategies Add footnote “Dr. William Wallace Covington , Director , The Ecological Restoration Institute testimony before the U S Senate Committee on Energy and Natural Resources: “ The solutions you propose are in his testimony but not given credit to him or any other group by reference. Williams, Public Citizen | Thank you. The text in question has undergone major revisions that we believe address the reviewer’s concerns. The reviewer may re-examine the issue when the Second Draft is released for review. |
| P | Garfin | 139 | 1 | 4 | Statement in draft USP document: “Precipitation patterns are already observed to be shifting, with more rain falling in heavy downpours, the kinds of events that can lead to flooding.” Comment: CCSP’s volume on Weather and Climate Extremes in a Changing Climate (SAP 3.3) does not mention observations of increased precipitation intensity or frequency in the Southwest. In fact, CCSP SAP 3.3 Figure 2.8 (p. 47) clearly does not show increased intense precipitation in the Southwest (nor does that region show up in previous work by Groisman). CCSP SAP 3.3 (p.49) also mentions “During the monsoon season (June-September) in northwestern Mexico, the frequency of heavy events does not show a significant trend.” Climate change projections (e.g., Diffenbaugh et al., 2005 in Proceedings of the National Academy of Sciences www.pnas.org/cgi/doi/10.1073/pnas.0506042102), show limited spatial coherence for a increased frequency of heavy precipitation in the Southwest as opposed to other regions (e.g., the Northeast or Southeast). I suggest that a much more convincing argument for enhanced flood risk in the Southwest results from a combination of (a) lack of snowcover on the lower slopes of high mountains, (b) trend toward increased fraction of winter precipitation falling as rain – therefore, running off more rapidly (see Knowles et al., 2006. Trends in Snowfall versus Rainfall in the Western United States. J. Climate 19: 4545-4559), and (c) increased likelihood of rain on snow events – resulting in rapid runoff and flooding (Bales et al. 2007. Mountain Hydrology of the Western United States. WATER RESOURCES RESEARCH, VOL. 42, W08432, doi:10.1029/2005WR004387, 2006 – Figure 1, in particular, and in section 2.2.1),. Garfin, University of Arizona | Thank you. The suggestion has been considered, but the author team has decided to retain this as is. |
| P | URS | 139 | 1 | | add to first paragraph about “hardpan” soil conditions due to lack of vegetation and | Thank you. Space limitations preclude the additional of all |

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| | | | | | sun-baked soils. There can be significant rainfall runoff because of these conditions, causing flash flooding. We may also want to add a discussion on sand storms and their affects. URS | suggested comments. |
| P | URS | 139 | 2 | | Add discussion on mitigation measures due to the impacts of increased flooding. URS | |
| P | Chinn | 140 | | | <p>General Comments on Northwest Region</p> <p>Please note that there is an ongoing debate at the University of Washington on whether there is clear evidence that human-induced climate change has caused a drop in 20th century snow levels.</p> <p><http://seattletimes.nwsourc.com/html/localnews/2008094636_climate06m.html>http://seattletimes.nwsourc.com/html/localnews/2008094636_climate06m.html http://seattletimes.nwsourc.com/html/home/>http://seattletimes.nwsourc.com/html/home/) Wednesday, August 6, 2008 - Page updated at 12:00 AM</p> <p>Permission to reprint or copy this article or photo, other than personal use, must be obtained from The Seattle Times. Call 206-464-3113 or e-mail <mailto:resale@seattletimes.com>resale@seattletimes.com with your request.UW study examines decline of snowpack</p> <p>By Warren Cornwall Seattle Times environment reporter</p> <p>Maybe the snow in the Cascade Mountains isn't in such immediate peril from global warming after all. Despite previous studies suggesting a warmer climate is already taking a bite out of Washington's snowpack, there's no clear evidence that human-induced climate change has caused a drop in 20th century snow levels, according to a new study by University of Washington scientists. In fact, the newest study also predicts the Cascade snows — vital to water supplies, crop irrigation and salmon — could enjoy a delay in the effects of global warming. But the findings have already become part of a scientific debate with an unusually political tone. It's an ongoing disagreement that has UW researchers taking sides against each other and has attracted the attention of political groups. And a leading scientist on the other side of the debate said the latest analysis speculates about the future and offers little new about the past. "They're trying to forecast the next 20 years or so, and I don't think they can do it," said Alan Hamlet, a UW hydrologist who has written papers about historic Cascade Mountain snowpacks. Past studies have frequently focused on steep declines in Cascade snowpack in the second half of the 20th century, with drops measuring 30 percent or more. But Cliff Mass, a well-known UW meteorologist, said the new study, which he co-authored, shows it all depends on which years are examined. He and his co-authors argue snow levels were unusually</p> | Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |

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| | | | | | | <p>high in the 1950s, creating a distorted picture of historic patterns.</p> <p>Measurement of mountain snow levels were spotty before the 1950s, making it harder to get a complete picture. But Mass and his colleagues tried to estimate snowpack for earlier years based on measurement that did exist: the amount of water that flowed down streams as snow melted.</p> <p>Using that method, they found a smaller drop in snowpack between the 1930s and today — 23 percent. That still may sound like a big drop, but the scientists argue that it could be statistically insignificant, so it's hard to say whether it's meaningful. They also say that many of the changes appear to be attributable to shifting weather patterns driven by the Pacific Ocean.</p> <p>"We can't see the global-warming signature in terms of a decline in snowpack," said Mark Stoelinga, the study's lead author, and a professor in the UW's Atmospheric Sciences Department.</p> <p>Mass and his colleagues also predict the oceans could help buffer Washington's snows from immediate impacts of climate change. A number of computer models show the northeast Pacific warming more slowly than most of the world's oceans, Mass said.</p> <p>That could help keep temperatures in higher altitudes, which would mean the difference between rain and snow in the Cascades, from rising quickly over the next few decades, Mass said.</p> <p>But, Mass doesn't say there's nothing to worry about. The Northwest is still on course for a big drop in snowpack — and the accompanying water-supply problems — by the end of the 21st century.</p> <p>"We're in a place that is not going to warm up as quickly," Mass said at a recent conference by free-market think tank, the Washington Policy Center. But "eventually global warming will have a profound effect."</p> <p>The study has not yet been peer-reviewed.</p> <p>Ongoing dispute</p> <p>Hamlet counters that the bigger historical picture — gradually declining snowpack over the 20th century — has already been put forward, most recently in a study published in 2008. In fact, he wrote it, along with State Climatologist Philip Mote, another UW scientist who has been a primary player in the ongoing dispute.</p> <p>Mote was on vacation this week and couldn't be reached to review the latest study.</p> <p>But Hamlet disagrees with Mass that the snowpack drop could be explained mostly by fluctuating ocean conditions. The Cascade snowpack trends in the second half of the century are consistent with rising temperatures in the western United States, which have been tied to global warming, he said.</p> <p>Hamlet also criticizes some of the statistical analysis in the new study, saying it could exaggerate the role of decade-to-decade changes in ocean conditions while understating other potential influences, including global warming.</p> <p>"I just don't think the science is there," Hamlet said.</p> <p>Ocean conditions are hard to predict, Hamlet argues, making it impossible to predict snowpack levels over the next few decades. But in the long term it's safe to bet that rising temperatures are going to mean less snowpack.</p> <p>Common ground</p> <p>The dispute traces back to 2007, when UW meteorologist Mark Albright, an associate of Mass and co-author of the new study, challenged claims that Northwest snowpacks had fallen by half in the second half of the 20th century.</p> <p>In the ensuing debate, Mote stripped Albright of his title as associate state climatologist. Mass then</p> | |

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| | | | | | <p>accused Mote of censorship.</p> <p>Despite the acrimony, several prominent colleagues said the two side's findings really have a lot in common.</p> <p>There's broad agreement that snowpack has fallen sharply since the 1950s, and the apparent rate of decline is lower when you go back to the early 1900s. Snowpack has held steady or even increased slightly since the 1970s.</p> <p>But Mass insisted there are important differences. He pointed to Hamlet's claims that historic snowpack declines appear consistent with global warming.</p> <p>"There is no evidence that it is influencing snowpack here in any significant way," Mass wrote in an e-mail.</p> <p>Warren Cornwall: 206-464-2311 or wcornwall@seattletimes.com</p> <p>Copyright © 2008 The Seattle Times Company Chinn</p> | |
| P | D'Aleo and Taylor | 140 | | | <p>This comment focuses on the Pacific Northwest Region of the United States that the document has incorrectly captured past conditions by cherry picking start time of the data period in clear violation of the Federal Information Quality Act (IQA) which demands an honest assessment as the starting point for any analysis. Further since it has been admitted by the IPCC modeler lead authors such as Kevin Trenberth that the models show no skill in predicting regional weather, there is no basis for any projections of impacts for any region when starting with an inaccurate initial assessment.</p> <p>In addition every honest meteorologist and climatologist recognizes the changes seen in the 1977 to 1998 period were the result of the PDO flip in 1977 (Great Pacific Climate Shift) which favored an increase in El Ninos which forced the jet stream south. Your own April 1 Snow water equivalent (SWE) chart below shows that California water increased as northern areas diminished</p> <p>D'Aleo and Taylor</p> | Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |
| P | D'Aleo and Taylor | 140 | | | <p>The Statement in question is on page 140. Totally bogus impacts were also shown on tourism for this region on page 47.</p> <p>"The Northwest's rapidly growing population, as well as its forests, mountains, rivers, and coastlines, are already experiencing human-induced climate change and its impacts. Regionally averaged temperature rose about 1.5°F over the past century (with some areas experiencing increases up to 4°F), and is projected to increase another 3 to 10°F in this century, with higher emissions scenarios resulting in the upper end of this range. Increases in winter precipitation and decreases in summer precipitation are projected by many climate models, though these projections are less certain than</p> | Thank you. This section has been modified due to other review comments and the issue addressed by this comment is no longer pertinent to the document text. |

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| | | | | | | <p>those for temperature. Impacts related to changes in snowpack, streamflows, sea level, forests, and other important aspects of life in the Northwest are already underway, with more severe impacts expected in this century in response to continued and much more rapid warming.</p> <p>Declining springtime snowpack leads to reduced summer streamflows, straining water supplies. The Northwest is highly dependent on temperature-sensitive springtime snowpack to meet growing, and often competing, water demands such as municipal and industrial uses, agricultural irrigation, hydropower production, navigation, recreation, and in-stream flows that protect aquatic ecosystems including threatened and endangered species. Higher cool season (October through March) temperatures cause more precipitation to fall as rain rather than snow, and contribute to earlier snowmelt. April 1 snowpack, a key indicator of natural water storage available for the warm season, has already declined substantially throughout the region.</p> <p>The average decline in the Cascade Mountains, for example, was about 25 percent over the past 50 years, with most of this due to the 2.5°F warming in cool season temperatures over that period. Increasing declines in Northwest snowpack are projected to accompany additional warming in this century, varying with latitude, elevation, and proximity to the coast. April 1 snowpack is projected to decline as much as 40 percent in the Cascades by the 2040s⁴. Throughout the region, earlier snowmelt will cause a reduction in the amount of water available during the warm season.</p> <p>(Note: Figures included in this comment. They are part of the electronic file)</p> <p>(Following from page 47) The Mountain West is projected to see a continuation of the observed trend toward warmer winters and shorter snow seasons. Winter sports dependent on snow, including downhill skiing and snowboarding, cross-country skiing, snowshoeing, and snowmobiling are expected to see worsening conditions, potentially becoming unviable as soon as 2050 in some locations. Any significant shortening of the snow season is likely put some ski areas out of business. For example, a ski resort like Aspen is open for about 140 days; it takes the resort 100 days to break even and cover costs. If the season is compressed by a few dozen days, the resort can become unprofitable.”</p> <p>COMMENTS FROM GEORGE TAYLOR</p> <p>A few years ago, several papers by scientists at the University of Washington (Mote, 2003; Mote, et al, 2004; Mote, et al, 2005) suggested that snowpack in the Pacific Northwest was declining due to global warming.</p> <p>The Mote papers included the statement: "A study of springtime mountain snowpack in the Pacific Northwest showed widespread declines in snowpack since 1950 at most locations with largest declines at lower elevations indicating temperature effects." This author (George Taylor) responded with an article discussing Northwest snow trends, included was the following statement: “Note the starting point for this analysis; the late 1940s-early 1950s were an exceptionally snowy period in Oregon and the Pacific Northwest. The Mote, et al papers used 1950 as a starting point because snowpack measurements were "widespread by the late 1940s" (Mote, et al, 2005) and much less</p> | |

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| | | | | | | <p>extensive earlier. However, in view of the fact that climate conditions prior to the late 1940s were very different, one might wonder if inclusion of longer period data sets would change the result.” They did. Period-of-record trends were very different for longer data sets than they were for the period beginning in 1950. The conclusions of that analysis:</p> <p>“The use of snowpack trends from 1950 through current suggests a much different (steeper) trend than if period of record measurements are used. Granted, there exist relatively few stations that extend back prior to 1940, but those stations whose records are available make it clear than monotonic decreases in snow pack do not occur through the entire period of record.</p> <p>“Based on a limited analysis, there are indications that precipitation is a much more significant influence on snow pack than is temperature.”</p> <p>Among the charts shown in the article were the following. Each chart shows the 1950-1997 trend (the period used for the Mote et al papers) and a best-fit linear trend (including the percentage reduction in snowpack for the period). The second chart shows the period of record through 2006.</p> <p>Figures Nonetheless, the idea that snows were decreasing due to global warming, and would likely keep doing so, became a common and popular one in the Northwest. Seattle’s mayor, Oregon’s Governor, and other public officials rushed to include this “fact” in their policy statements. For example, the Report to the Governor (of Oregon) from the Governor’s Advisory Group on Global Warming (December 2004) stated:</p> <p>“Between 1950 and 2000, the April 1 snowpack declined. In the Cascades, the cumulative downward trend in snow-water equivalent is approximately 50% for the period 1950–1995. Timing of the peak snowpack has moved earlier in the year, increasing March streamflows and reducing June streamflows. Snowpack at low-to-mid elevations is the most sensitive to warming temperatures.”</p> <p>However, in 2007 the “snow is going away” idea began to crumble. Washington Assistant State Climatologist Mark Albright confirmed that there was no significant long-term trend in snowpack. The winter of 2007-08 was one of the snowiest on record. And last month, the Seattle Times published the following news piece:</p> <p>http://seattletimes.nwsourc.com/html/localnews/2008094636_climate06m.html</p> <p>According to the Times, “Maybe the snow in the Cascade Mountains isn’t in such immediate peril from global warming after all.”</p> <p>“Despite previous studies suggesting a warmer climate is already taking a bite out of Washington’s snowpack, there’s no clear evidence that human-induced climate change has caused a drop in 20th century snow levels, according to a new study by University of Washington scientists.”</p> <p>It is comforting that use of appropriate data records has dispelled some “bad science” conclusions. One hopes that policymakers will recognize this and modify their policies accordingly.</p> <p>Figures Time does not permit a full analysis of temperatures this. I will focus instead on snowfall and the real driver the PDO.</p> | |

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| | | | | | | <p>SNOWFALL - THE REAL DRIVER, THE PDO Snowfall patterns are indeed cyclical and for the most part controlled by natural factors. With climate cycles there are always winners and losers. We all take our turns.</p> <p>The Pacific Decadal Oscillation flipped in 1978 in what was called the Great Pacific Climate Shift. With it water off the west coast and in the ENSO regions of the tropical Pacific warmed dramatically from the predominantly cold conditions of the prior 30 years.</p> <p>Figures El Ninos cause a shift south of the storm tracks, more snows for the southwest mountains and southern Rockies and less snow for the Pacific Northwest and mountains of southwest Canada across the Northern Rockies. In Mote’s 2005 paper, he attributed the declining snowpack in the Northwest mainly to global warming. He did note in the conclusion that the PDO may have had some role (up to one-third) in the warming since 1920 but said only a small fraction of the precipitation changes can be explained by any of the changes in the Pacific (an unfounded statement).</p> <p>Indeed when one looks at precipitation in the mountains of the west extending back into the 1930s, one can clearly see how well the precipitation anomalies matched to the state of the PDO. Annual precipitation for Cedar Lake, WA is shown below and its relationship with the PDO is clear.</p> <p>Figure Even more relevant and dramatic in demonstrating the importance of the starting point in this analysis and of the importance of the PDO is use of the snow water equivalent for Bumping Lake, WA, for the years from 1950 and then from 1915.</p> <p>Note the large spike around 1950 which Mote intentionally chose to show a decline.</p> <p>Figure This matches the PDO cycle to a tee, with enhanced snow during the cold eras from 1947 to 1977 and after 1997 and reduced snowpack during the warm eras (1922 to 1947, 1977 to 1997)</p> <p>Now you might recall that in 1999/2000 that Mt. Baker in Washington set a new world record for seasonal snowfall. That broke the record set in 1971/72.</p> <p>Figure In the late 1990s the PDO reverted back negative for a few years, back to the state it was in 1971/72, when the prior record had been set. A significant three year La Nina shifted the storm track north targeting the Pacific Northwest.</p> <p>The PDO bounced positive again with the El Nino of 2002/03. The Pacific Northwest even experienced an unusual one year drought with this rebound but now after a few neutral years it is again turned strongly negative.in the last year (now NCEP PDO is more than 2 STD negative), the snowfall situation in the Pacific Northwest AND Rockies had a banner in places ALL-TIME record snow year. Snow was still on the ground in the mountains in July turning flower tours into snow tours.</p> <p>As there were in the last negative phase (1947 to 1977), there will be more La Ninas than El Ninos (in that last phase a very nearly 2 to 1 ratio). The storm tracks will shift back north once again targeting the Pacific Northwest and British Columbia coasts.</p> | |

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| | | | | | <p>The “cherry-picking” note can be shown in this note from Mark Albright, former state climatologist from Washington (stripped of his position when he made note of this).</p> <p>Here is a plot of 1 April snowpack as measured at a composite of all 86 snotel sites with a complete record from 1976-2006 in the Washington and Oregon Cascade Mountains: Figure The linear trend line shows an 11% increase over the 31 year period. This does not even include 2007 and 2008, both big snow years.</p> <p>CORRECTION REQUIRED Because of these serious misanalysis and errors of both commission and omission with cherry picking dates for SWE trends and lack of understanding of the real forcings at play, this entire section on regional climates clearly violates the data quality act and should be deleted or rewritten.</p> <p>If you wish to correct these data issues and correctly show the historical changes and include a more accurate forecast, it is suggested that the following wording be substituted:</p> <p>PACIFIC NORTHWEST “The Northwest’s rapidly growing population, as well as its forests, mountains, rivers, and coastlines, continue to experience natural climate change and its impacts.</p> <p>Reduction in winter snows followed the Great Pacific Climate Shift in 1977. This has begun reversing with a reversal of the PDO in the late 1990s and especially the last two winters. The shift north of the storm track will accompany this shift with more frequent La Ninas.</p> <p>Projections that the PDO new state will remain for two decades suggests an increase in winter snowpack, earlier snows in the fall and later snowmelts. See Easterbrook (Western Washington University) and Patzert (JPL). Glaciers may advance as they did in the last snowy era. (Note: References cited – in electronic file) D’Aleo and Taylor</p> | |
| P | National Wildlife Federation | 151 | 2 | | There should also be reference to coral diseases such as white band and black band. National Wildlife Federation | Thank you. We agree the issue is important; however, we chose to highlight and discuss it elsewhere in the report. |
| P | Kruk | 152 | 1 | 3 | change the \$1 trillion dollar reference to “60% of the Nation’s GDP.” I think most readers will not know the importance of \$1 trillion dollars, but 60% of the entire GDP makes it sound much more important and meaningful. Kruk, NCDC | Thank you. We have checked the reference and are sticking with the \$1 trillion dollar figure. |
| P | Keillor | 152 | 3 | | The sea level rise problem for the coasts includes more than “significant sea level rise”. It is overshadowed by the present perceived instabilities and potential | Thank you. We agree the issue is important; however, we chose to highlight and discuss it elsewhere in the report. |

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| | | | | | breakdown in the Greenland ice cap and parts of the Antarctic ice sheets. An IPCC (2007) report stated: “This (breakdown of either polar ice sheet) questions both the long-term viability of many coastal settlements and infrastructure (e.g. nuclear power stations) across the globe and the current trend of increasing human use of the coastal zone, including a significant coastward migration. This issue presents a challenge for long-term coastal spatial planning.” (Page 41 in Parry, M.L., O.F. Canziani, J.P. Palutikof and Co-authors 2007; Technical Summary. Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. vander Linden and C.E. Hanson, Editors. Cambridge University Press, Cambridge, U.K.). The information on ice sheet instability available to planners is limited by a number of factors that are probably spelled out in the USCCP’s second draft report on Abrupt Climate Change (April 2008). Keillor, ASFPM | |
| P | Kruk | 152 | 3 | 7 | change the word “including” to “like”, so that it reads, “...weakening their capacity to absorb the storm surge of hurricanes like Katrina.” Kruk, NCDC | Thank you. The suggested change has been made. |
| P | National Wildlife Federation | 153 | 1 | 2 | The sentence describing recent projections needs some clarification. The mention of the 3-5 foot projection and issue of subsiding areas should be separated. The current wording conflicts the eustatic projections with relative changes. Rather, it would be good to have a separate sentence that says something to the effect of “areas where coastal lands are subsiding are likely to see even greater relative sea-level rise” National Wildlife Federation | Thank you. The treatment of sea-level rise and relative sea-level rise along subsiding coasts has been reconciled throughout the report. |
| P | Pogue | 153 | 1 | | When mentioning the susceptibility of Boston and New York to sea level rise, we must mention the critical nature of the vulnerability of their intermodal transportation systems—these transportation systems are among the largest in the world, moving people by subway, bus, and highway. The most vulnerable transportation components to sea level rise and storm surge are the underground subway systems. It would take very little water rise to cripple these transportation systems. The economic impact on these cities would be devastating. Recovery of these large metropolitan areas would take a very long time and thus have a severe detrimental effect on their economy. Pogue, CFM - ASFPM Coastal Committee Co-Chair | Thank you. The vulnerability of transportation systems is briefly mentioned in this paragraph and considered in greater depth in the Transportation sector. |
| P | URS | 153 | 1 | | When mentioning the susceptibility of Boston and New York to sea level rise, we | Thank you. The vulnerability of transportation systems is briefly |

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| | | | | | <p>must mention the critical nature of the vulnerability of their intermodal transportation systems—these transportation systems are among the largest in the world, moving people by subway, bus, and highway. The most vulnerable transportation components to sea level rise and storm surge are the underground subway systems. It would take very little water rise to cripple these transportation systems. The economic impact on these cities would be devastating. Recovery of these large metropolitan areas would take a very long time and thus have a severe detrimental effect on their economy.</p> <p>URS</p> | <p>mentioned in this paragraph and considered in greater depth in the Transportation sector.</p> |
| P | Pogue | 155 | | | <p>Box-Bottom Please do NOT mention or advocate the use of hard structures such as levees or sea walls as a means to stave off the impacts of sea level rise or coastal inundation. If that is not your intention in this section, then it is very confusing and must be clarified because it is not a wise adaption strategy. Much of the damage to the coast is because of the construction of these very structures: sea walls, groins, jetties, armoring, and levees, just to name a few. Progressive States such as Rhode Island have realized how harmful these “hardened” structures are and have placed moratoriums on permitting them, with good reason. Even the U.S. Army Corps of Engineers has pulled away from hard structures in favor of “soft solutions” such as acquisition and enhancing of wetlands and habitat restoration. In addition to the negative impacts that these hardened structures create as a response measure to climate change and to protect property and infrastructure from coastal flooding, when such structures are built they require operation and maintenance, which can be very costly and a problem for most communities. Federal agencies do not provide grants for the operation and maintenance of these structures, and in the event of their damage during a disaster; FEMA public disaster funds or even mitigation funds do not pay for the repair or replacement of these structures.</p> <p>Pogue, CFM - ASFPM Coastal Committee Co-Chair</p> | <p>Thank you. A sentence has been added making the point that structural protection should be avoid actually increasing risks or worsening beach erosion or wetland retreat.</p> |
| P | URS | 155 | | | <p>Box: Adaptation Strategies Please do NOT mention or advocate the use of hard structures such as levees or sea walls as a means to stave off the impacts of sea level rise or coastal inundation. If that is not your intention in this section, then it is very confusing and must be clarified because it is not a wise adaption strategy. Much of the damage to the coast is because of the construction of these very structures: sea walls, groins, jetties, armoring, and levees, just to name a few. Progressive States such as</p> | <p>Thank you. A sentence has been added making the point that structural protection should be avoid actually increasing risks or worsening beach erosion or wetland retreat.</p> |

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| | | | | | <p>Rhode Island have realized how harmful these “hardened” structures are and have placed moratoriums on permitting them, with good reason. Even the U.S. Army Corps of Engineers has pulled away from hard structures in favor of “soft solutions” such as acquisition and enhancing of wetlands and habitat restoration. In addition to the negative impacts that these hardened structures create as a response measure to climate change and to protect property and infrastructure from coastal flooding, when such structures are built they require operation and maintenance, which can be very costly and a problem for most communities. Federal agencies do not provide grants for the operation and maintenance of these structures, and in the event of their damage during a disaster; FEMA public disaster funds or even mitigation funds do not pay for the repair or replacement of these structures.</p> <p>URS</p> | |
| P | Houck | 158 | 6 | | <p>Winter temperatures paragraph: It is reported that -40 degrees temperatures for several days is needed to kill off the beetles. This is not a common assessment. Some studies have shown that sustained -20 degree temperatures for two weeks will kill the insects. Other studies have shown that -30 degree temperatures for five consecutive days will do it. Finally, a study exists that shows -40 degrees for only twelve consecutive hours kills the insect. For this application, it is recommended that the exact temperature reported be dropped and replaced with “bitter cold temperatures sustained for several days”.</p> <p>Houck, P.E., CFM; ASFPM, Colorado Water Conservation Board</p> | Thank you for your comment. This section has been removed. |
| P | Hagen | 160 | | 3 | <p>Response Strategies Revisited: focus on Adaptation, Page 160 line 3-4. Comment on “Throughout this report, examples of adaptation have been highlighted.”</p> <p>The rest of the document reads like a polemic advocating climate control. No adaptation examples were seen in the sections read. Recommend a serious editor review to provide balance between climate control and adaptation. Ensure each of these accommodation methods are listed in the rest of the documents, and that all the accommodation methods mentioned elsewhere are summarized here.</p> <p>Hagen, AcrossTech</p> | Thank you for your comment. Adaptation examples throughout the text have been revised with your comment in mind. |
| P | Hagen | 160 | | 47 | <p>Add section “Buildings”</p> <p>Fire Codes Fire resistant structures, fire buffers, water supplies. Energy Codes Upgrade codes to near optimal insulation codes. Storm Codes Upgrade codes to handle higher winds.”</p> <p>Hagen, AcrossTech</p> | Thank you. References to building codes have been clarified throughout the text. |

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| | P | Pogue | 160 | | | <p>Box-Bottom Add a section titled “Local Insurance Incentives: the FEMA Community Rating System.” You discuss the role of insurance on a national/global scale, but not in a way that would really make the reader care, because they don’t understand how it affects them. However, the CRS can be briefly described here and explained that it would provide reduced annual insurance premiums. It is directly related to providing a financial incentive to the local community officials for better response strategies through management, zoning, building codes, implementation of stormwater and watershed regulation, and purchasing open space; in essence, better floodplain management above the basic regulations of the NFIP. The CRS rewards those communities that take steps to reduce the damages caused by floods by awarding points—the more points earned, the greater the reduction to the homeowner’s annual insurance premium. In Rosemont, CA, they have done so well that all of the property owners in that community receive a 45 percent savings on their annual insurance premiums. This is just one measure that can reduce the impact of increased flooding from climate change. This program is a win-win example of a response strategy for local officials, politicians, and homeowners to actively respond to the impacts of increased damages in their community caused by flooding and storm surge created by climate change.</p> <p>Pogue, CFM - ASFPM Coastal Committee Co-Chair</p> | <p>Thank you. A sentence has been added making the point that structural protection should be avoid actually increasing risks or worsening beach erosion or wetland retreat.</p> |
| | P | URS | 160 | | | <p>Box: Insurance and Adaptation Add a section titled “Local Insurance Incentives: the FEMA Community Rating System.” You discuss the role of insurance on a national/global scale, but not in a way that would really make the reader care, because they don’t understand how it affects them. However, the CRS can be briefly described here and explained that it would provide reduced annual insurance premiums. It is directly related to providing a financial incentive to the local community officials for better response strategies through management, zoning, building codes, implementation of stormwater and watershed regulation, and purchasing open space; in essence, better floodplain management above the basic regulations of the NFIP. The CRS rewards those communities that take steps to reduce the damages caused by floods by awarding points—the more points earned, the greater the reduction to the homeowner’s annual insurance premium. In Rosemont, CA, they have done so well that all of the property owners in that community receive a 45 percent savings on their annual insurance premiums.</p> | <p>Thank you for your comment. We have mentioned FEMA in the context of floodplain management in the text, but space limitations prevent more in-depth discussion.</p> |

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| | | | | | <p>This is just one measure that can reduce the impact of increased flooding from climate change. This program is a win-win example of a response strategy for local officials, politicians, and homeowners to actively respond to the impacts of increased damages in their community caused by flooding and storm surge created by climate change.</p> <p>URS</p> | |
| P | Hagen | 161 | | 20 | <p>Table-Water Supply Add: “ Harvest rainwater” Develop codes, incentives, and financing to harvest rainwater.” Hagen, AcrossTech</p> | Thank you. Rainwater collection as a strategy is discussed in the Islands section. |
| P | Hagen | 162 | | | <p>Figure-Left Block Change “Calculate thresholds” to “Quantify thresholds”. (Comment: I.e. this may require both measurements, modeling and validation.) Hagen, AcrossTech</p> | Thank you. The figure has been modified and simplified. |
| P | Hagen | 162 | | 4 | <p>“Scientists need to accurately describe changing conditions, understand impacts, identify information needs, develop strategies and communicate these in ways that scientifically meaningful and helpful to decision makers to plan to adapt to a changing climate and to reduce high impact climate effects.” Hagen, AcrossTech</p> | Thank you. Part of this suggested rewording has been incorporated into the document. |
| P | Hagen | 162 | | | <p>after line 11 Top block Change: “Understand feedbacks from the climate system” to “Quantify climate feedbacks, especially water” Add: “Validate climate models and quantify uncertainties.” (Comment: “Quantify” includes both “Understand” and “Measure” and “Model” and “Validate”) Hagen, AcrossTech</p> | Thank you. The figure has been modified and simplified. |
| P | Hagen | 162 | | | <p>after line 11 Right block Change to uniform grammar, run grammar & spell check. E.g.: “Improve adaptation understanding and planning” “Estimate costs and benefits of adaptation actions” Hagen, AcrossTech</p> | Thank you. The figure has been modified and simplified. |
| P | Keillor | 162 | | | <p>Add a new key question: What is a best-estimate, upper bound for sea level rise over the present century and beyond, assuming a continuation (or acceleration) of the present apparent instabilities in Greenland and Antarctic ice sheets? Coastal planners and coastal engineers need a gathering of experts to critically examine</p> | Excellent suggestion, thank you. It was added to the text. |

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| | | | | | <p>available evidence and form a consensus approach to answering this question. The continuing absence of an upper bound for expected sea level rise in this century and beyond is unacceptable in planning, constructing and maintaining coastal communities and facilities.</p> <p>Keillor, ASFPM</p> | |
| P | Pogue | 162 | | | <p>This discussion and diagram is missing any mention of mitigation. FEMA has recently improved their benefit-cost analysis methodologies and has also developed a Losses Avoided methodology for communities to use when they have been hit by natural hazards and previously mitigated areas suffer no damage. This is valuable data that should be mentioned and shared. In your diagram, from the bubble “Impacts to Adaption” there should be a line “Losses Avoided.” To the right of the “Adaptation” box, two bullets should be added: “Better understanding of the effectiveness of mitigation,” and “Benefits of mitigation.”</p> <p>Pogue, CFM - ASFPM Coastal Committee Co-Chair</p> | <p>Thank you for your comment. The benefits and cost question is addressed more clearly. Please note, however, that the reviewer uses mitigation in the way the report uses adaptation.</p> |
| P | Sherwood | 162 | | | <p>Second and third italicized items under "Climate." Though these are presented as questions they really read like recommendations (in fact the first one is tellingly missing a question mark). As such I have a significant problem with the second and third italicized items under "Climate."</p> <p>Each of these promotes one of two widespread and harmful misconceptions: (1) that one of the climate models must be correct or nearly so, for any given purpose, and if we look carefully we can figure out which one; (2) that to predict regional climate correctly simply requires we decrease the model grid size down below the scale of interest. Rubbish! I strongly disagree with the last two sentences on pg. 162 which are unsupported by any analysis or definition of what "best" means other than the tautological interpretation that it is the model whose prediction happens to be correct.</p> <p>The situation: (1) all models need improvement and currently disagree on climate changes (especially precipitation and soil moisture) at resolved scales, as well as global warming rates, because of processes that are probably not well represented in any model; (2) there is no principled way to link specific model performance measures to specific target (e.g., regional) predictions, and generalized model evaluations performed to date have not indicated any clear overall winners or losers (see CCSP 3.1); (3) until global models are improved,</p> | <p>Thank you. These items have been removed from the section.</p> <p>This part of the Pathways section has been removed in response to this and other comments.</p> <p>(1) The USP can not make simple “motherhood and apple pie” statements that models need to be improved, despite the truth in that statement. (2) Because there is currently no appropriate metric to evaluate models is exactly why this work needs to be done. Point (3)’s topic has been removed from the USP in response to this and other comments.</p> |

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| | | | | | <p>there is no hope of satisfactory regional climate prediction by any downscaling stratagem. Statistical downscaling works fairly well (CCSP 3.1) and is not the weak link. Model development is now badly under-resourced; for example at NCAR I understand there are currently only four people working on developing CCSM, perhaps the most-used American climate model, and key physical components are not being upgraded despite known problems due to lack of resources.</p> <p>If possible at this point, I propose that "Determine best models" be changed to "Improve climate models," followed in italics by "How can we improve our confidence in regional projections of climate change?"--with the short answer being that we need to intensify model development and the increase the computational resources allocated to running them. This should be linked to the following, "Improve regional projections" item by changing its first sentence to read "While climate model fidelity needs to be improved, an additional issue is that global models are only able to make...."</p> <p>Sherwood, Yale University</p> | <p>This point is now included in the section, though the section has not been reoriented to specifically make this one point.</p> |
| P | URS | 162 | | | <p>This discussion and diagram is missing any mention of mitigation. FEMA has recently improved their benefit-cost analysis methodologies and has also developed a Losses Avoided methodology for communities to use when they have been hit by natural hazards and previously mitigated areas suffer no damage. This is valuable data that should be mentioned and shared. In your diagram, from the bubble "Impacts to Adaption" there should be a line "Losses Avoided." To the right of the "Adaptation" box, two bullets should be added: "Better understanding of the effectiveness of mitigation," and "Benefits of mitigation."</p> <p>URS</p> | <p>Thank you. Mitigation is now explicitly addressed in the figure and the section.</p> |
| P | Hartgerink | 162 | 1 | | <p>NASA climate models used to support at this documents conclusion should be in compliance with NASA-STD-7009: STANDARD FOR MODELS AND SIMULATIONS. Lack of compliance should be specifically annotated.</p> <p>Hartgerink, NASA</p> | <p>Thank you. The models used in this report are described in the revised Global section.</p> |
| P | Kruk | 162 | 3 | 4 | <p>third paragraph beginning with the sentence "Essential climate variables...", comment: a footnote or parenthesis very briefly explaining an ECV is required.</p> <p>Kruk, NCDC</p> | <p>Agreed and thank you.</p> |
| P | Frumhoff | 162 | 5 | | <p>final paragraph: "there is currently no reliable way to identify which models are best for North America." Please add reference for this overarching statement, and</p> | <p>Thank you. The value of ensembles has now been included in the text along with a reference to that point.</p> |

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| | | | | | clarify – given this, on what basis the author team ascribes confidence to the multimodel projections described in the report. Frumhoff, Union of Concerned Scientists | |
| P | Hagen | 163 | | 1 | <p>Add section: “Validate climate models, quantifying uncertainties.” “Climate models have failed internal validation tests, and have given temperature and drought projections that diverge from historical climate changes. Validating climate models and quantifying the uncertainties in their predictions is critically important to being able to use their projections in making expensive policy decisions. Models need to be validated for energy conservation, accurate gas absorption, temperature and humidity trends with altitude, and boundary conditions, and then for internal validation against historical data.”</p> <p>Cite: “Tests of Regional Climate Model Validity in the Drought Exceptional Circumstances Report,” David RB Stock well, August 5, 2008, Niche Modeling (http://landshape.org/enm) http://landshape.org/stats/tests-of-regional-climate-model-validity-in-the-drought-exceptional-circumstances-report/ (Comment: See Stock well’s Abstract: “In a statistical re-analysis of the data from the Drought Exceptional Circumstances Report, all climate models failed standard internal validation tests for regional droughted area in Australia over the last century. The most worrying failure was that simulations showed increases in droughted area over the last century in all regions, while the observed trends in drought decreased in five of the seven regions identified in the CSIRO/Bureau of Meteorology report. Therefore there is no credible basis for the claims of increasing frequency of Exceptional Circumstances declarations made in the report. These results are consistent with other studies finding lack of adequate validation in global warming effects modeling, and lack of skill of climate models at the regional scale.”) (Comment: IPCC claims “90%” confidence in its projections. Yet the IPCC projections are outside of 95% confidence bounds for global temperature trends from 2001 to 2008. See: “Temperature Regression Results” http://rankexploits.com/musings/wp-content/uploads/2008/04/ipcc_ar4_and_trend.jpg “Accounting For ENSO: Cochrane Orcutt” Lucia Liljegren, The Blackboard, April 4, 2008</p> | <p>Thank you. As this important work is already underway, it does not need to be highlighted as a key topic in reducing gaps in understanding.</p> <p>Noted.</p> <p>Noted.</p> <p>See IPCC WG I, Figure 1.1 for a more accurate assessment of model projections versus observations.</p> |

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| | | | | | <p>http://rankexploits.com/musings/2008/accounting-for-enso-cochrane-orcutt/ Quote: “Accounting for the effect of ENSO by introducing the MEI index into the regression for temperature, the best estimate for trend of $m=-0.5$ C/century. the 95% confidence intervals are $-2.0C/century < m < 1.1$ C/century. The IPCC AR4 projection of of $+2.0C/century$ is rejected.” See also: “Ninety Month Trends: IPCC AR4 2C/Century still outside $\pm 95\%$ uncertainty bands.” Lucia Liljegren The Blackboard, 20 July 2008. http://rankexploits.com/musings/2008/ninety-month-trends-ipcc-ar4-2ccentury-still-outside-%C2%B195-uncertainty-bands/ ”Measured Temperature Anomaly vs Time” href=“http://rankexploits.com/musings/wp-content/uploads/2008/07/junehypothesisistest.jpg” Hagen, AcrossTech</p> | <p>ENSO can not be removed from the global temperature time series to determine what the temperature would be without ENSO because one of the ways warming impacts the planet is by altering circulation.</p> |
| P | Hagen | 163 | | 1 | <p>Section: Improve regional projections Add: “Decadal level climate changes differ significantly from IPCC projections. Models need to be improved to include the El-Nino, La Nina, Pacific, Atlantic and Arctic oscillations to unambiguously distinguish anthropogenic impacts from natural variations.” Hagen, AcrossTech</p> | <p>Thank you. Suggested changes were not incorporated because they are tangential to the issue at hand.</p> |
| P | Hagen | 163 | | 22 | <p>Correct to: “Oceans absorb one half of global carbon emissions,” (e.g. See: “Impact of Climate-Carbon Cycle Feedbacks on Emission Scenarios to Achieve Stabilisation” Chris Johnson et al. http://www.stabilisation2005.com/41_Chris_Jones.pdf) Hagen, AcrossTech</p> | <p>Thank you. This answer is more specific than the statement in the USP but the statement is still correct.</p> |
| P | Hagen | 163 | | 37 | <p>Change from: “Monitor and project extreme events” To: “Model and validate modeling extreme events” (Comment: Events are already being monitored and projected. Models now need to be improved and then validated to pass internal validation tests, and then to correctly and accurately predict extreme events including droughts, hurricanes and heat waves.) Hagen, AcrossTech</p> | <p>Thank you. This line has been removed from the USP. Not all extremes are well monitored or well projected.</p> |
| P | Hagen | 163 | | 34 | <p>Change to: “Will higher fuel costs lead to a quicker adaptation of solar and wind power and fuelsG” Hagen, AcrossTech</p> | <p>Thank you. This change was not made in part because it is unclear what “fuelsG” is referring to.</p> |

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| P | Frumhoff | 163 | 1 | | <p>“This report adjusts projected large-scale information...The downside of these methods is that some regionally important phenomena are not adequately taken into account.” Strongly suggest to strengthen this section by more explicitly describing the basis for confidence in the downscaling methods used in the studies cited in this report – confidence consistent with the discussion of results in the earlier sections - rather than only highlighting their limitations. Otherwise the naïve reader will see these as contradictory and confusing.</p> <p>Frumhoff, Union of Concerned Scientists</p> | Thank you. This part has been deleted from the USP in response to reviewer comments and insights. |
| P | Frumhoff | 163 | 3 | | <p>: “Without emissions scenarios that include these possible futures and others, models can not adequately project future climate change”. This will be highly misleading if taken out of context. Suggest to revise as “Including these possible futures and others will greatly enhance the capacity of models to project future climate climate.”</p> <p>Frumhoff, Union of Concerned Scientists</p> | Thank you. This part has been deleted from the USP in response to reviewer comments and insights. |
| P | Hagen | 164 | | 13 | <p>Add section: “Quantify climate feedbacks, especially water”</p> <p>“Climate feedbacks to changes in solar forcing, greenhouse gases, volcanic eruptions, cosmic rays etc. need to be better quantified and validated. It is particularly important to quantify and verify water vapor, precipitation, and cloud feedbacks.”</p> <p>(OR merge in with section “Understand how the climate system responds to change”)</p> <p>Hagen, AcrossTech</p> | Thank you. This part has been deleted from the USP in response to reviewer comments and insights assuming this comment was really targeting paragraph 3 on page 163 which seems most related. |
| P | Hagen | 164 | | 5 | <p>Change: “Calculate thresholds” to “Quantify thresholds”.</p> <p>(Comment: I.e. this may require both measurements, modeling and validation.)</p> <p>Hagen, AcrossTech</p> | Thank you. Excellent suggestion, however that line has been removed from the USP in an effort to simplify the report. |
| P | Hagen | 164 | | 9 | <p>Change to: “As the ocean becomes more acidic, it appears harder for some marine organisms to take calcium out of seawater to produce corals and shells, while others adapt to it.”</p> <p>Hagen, AcrossTech</p> | Thank you. There is no evidence that we know about of such evolution taking place. |
| P | Hagen | 164 | | 34 | <p>Change to: “Since, the primary cause of anthropogenic CO2 emissions, fossil fuel use, is a large part of the world’s economy and politics, . . .”</p> <p>Hagen, AcrossTech</p> | Thank you. While the point is technically specifically correct, it avoids the larger issue which helps put the matter into a fuller context, therefore the suggested edit was not incorporated. |
| P | Hagen | 164 | | 43 | <p>Change to: “A complete analysis requires valuing market and non-market goods and services and comparing climate control or adaptation with other humanitarian priorities. We do not yet know how to do this.”</p> | Thank you. The request is to add the complicating factor of “other humanitarian priorities” into the mix. In addition to this complicating factor we could add a zillion non-humanitarian |

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| | | | | | Cite: The Copenhagen Consensus 2008 Link to: http://www.copenhagenconsensus.com/Default.aspxGID=788 (Comment: This is an international effort led by Nobel Laureates to rank critically important humanitarian priorities including climate change.) Hagen, AcrossTech | priorities – better roads, faster internet, stronger military, etc. – which are not germane to the issue at hand. So this suggested edit is rejected. |
| P | Sherwood | 164 | 4 | | I was confused by "Quantify natural benefits" (benefits of what?). I believe the term "ecosystem services" is now used, or perhaps "environmental assets and services" Sherwood, Yale University | Thank you. This is now stated more clearly. |
| P | Hagen | 165 | | 32 | Determine unintended consequences Add: "Scarcities and higher prices for fuel, food, fertilizers have the greatest impact on the poor, especially in the least developed countries." Hagen, AcrossTech | Thank you. This section has been rewritten for clarity. |
| P | Frumhoff | 165 | 3 | | (Section on unintended consequences). "Because the cause of global warming..."Change to read "Because a primary cause" Frumhoff, Union of Concerned Scientists | Excellent point. The suggested edit has been made. |

ⁱ NCDC; GHCN-COADS; HadCRUT2v; RATPAC; HadAT2; UAH; RSS; NCEP50; and ERA40. Also see the graph "Global Temperature Changes..." on page 26 of the USP.

ⁱⁱ Fisher 1999

ⁱⁱⁱ NIPCC Report, 2008 p.3.

^{iv} Svensmark 2007a ; Experimental evidence...

^v NIPCC Report, p.9.

^{vi} NIPCC Report, p.12.

^{vii} Svensmark, 2007b; Cosmoclimatology...

^{viii} NIPCC Report, Figure 7 and text, p.7.

^{ix} NIPCC Report, p.8.

^x Spencer 2008